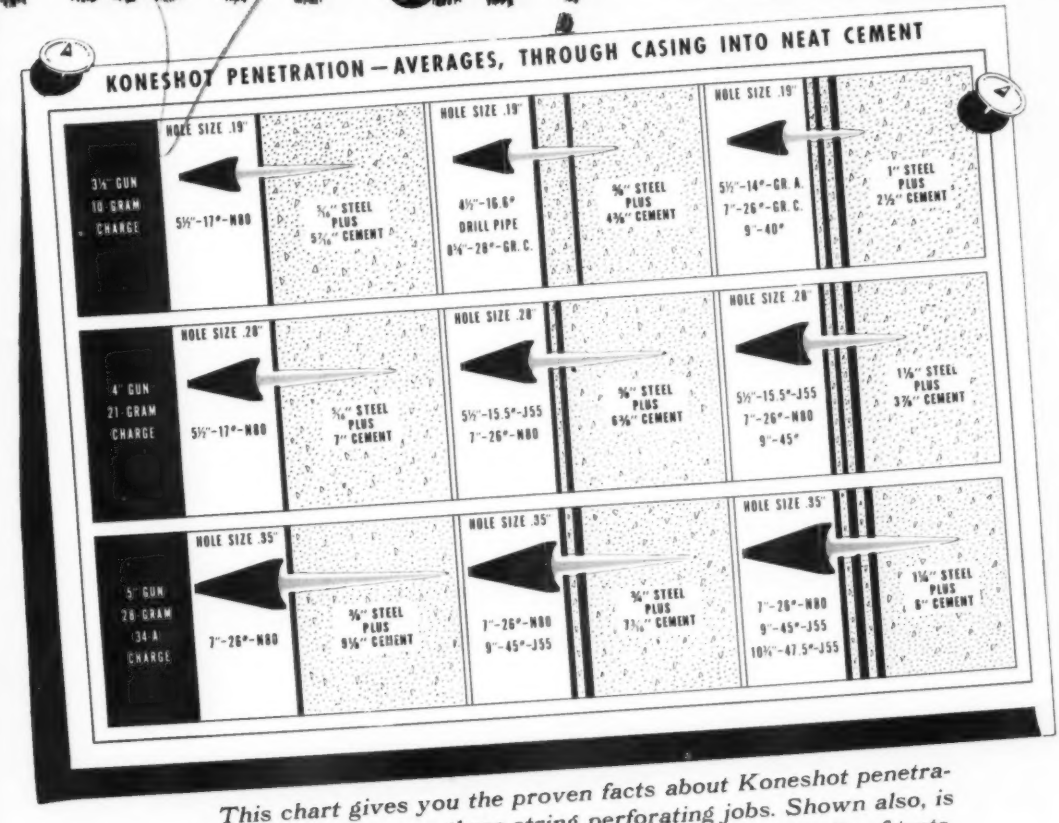
TECHNOLOGY DEPT.

The OIL AND GAS JOURNAL

PUBLIC LIBRARY
JUN 1 1950
DETROIT

PIN IT UP!

—and read it before ordering any perforating job!



This chart gives you the proven facts about Koneshot penetration on one, two or three string perforating jobs. Shown also, is the average hole size in the first string. For full details of tests, applications and data on both Koneshot and bullet perforating,

LANE WELLS

KONESHOT

PERFORATING

Use this Coupon

Lane-Wells Company
5610 South Soto Street, Los Angeles 58, Calif.
Please send me your new Perforating Bulletin.

Name _____
Company _____
Address _____
City _____ State _____

LOS ANGELES · HOUSTON · OKLAHOMA CITY

General Offices, Export Office and Plant - 5610 SO. SOTO STREET, LOS ANGELES 58, CALIFORNIA
LANE-WELLS CANADIAN CO. IN CANADA - PETRO TECH SERVICE CO. IN VENEZUELA

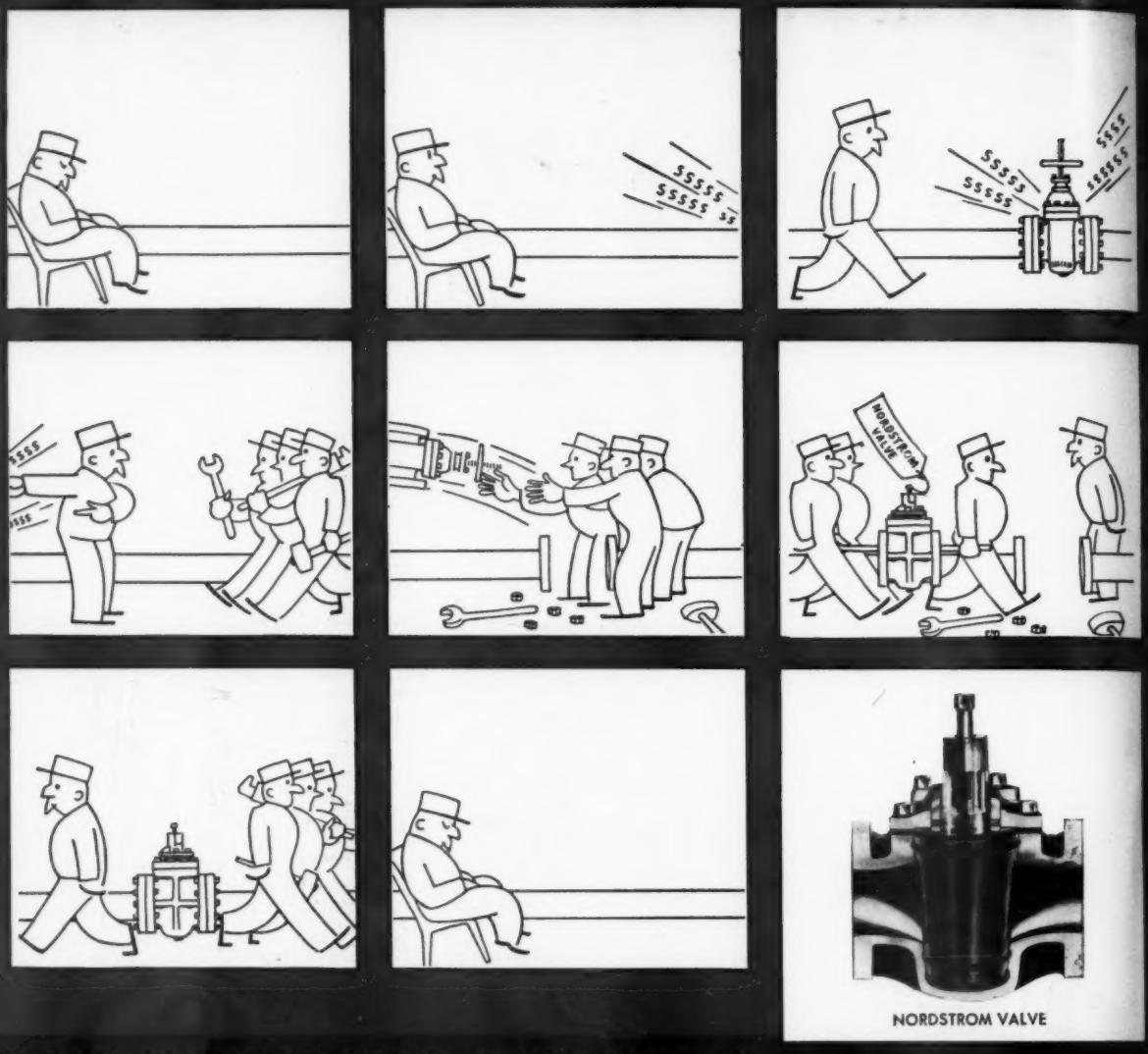
AK-306

PRICE 50 CENTS

TABLE OF CONTENTS PAGE 33

JUNE 29, 1950

XUM



NORDSTROM VALVE

DON'T WAIT FOR LEAKS TO WARN YOU

WHY LEAKS? Because a valve's packing has gone "haywire," or its seat has worn to the point of leakage and it can't effect a tight closure. Now *compare* Nordstrom. It is forever seated. The tapered plug never separates from its unexposed seat. Instead of using conventional packing to hug the stem or threads, Nordstrom applies a resilient anti-friction shoulder seal that can be tightened while the valve is under full pressure and in any position. Moreover, pressurized lubrication seals the valve—(1) at the seat, (2) around the ports—and now with Rockwell *Hypermatic* lubricant the valve is *automatically* lubricated to prevent leakage from even starting.

KEEP UPKEEP DOWN—by preventing leaks in the beginning.

Nordstrom Valves

NOW AUTOMATICALLY LUBRICATED WITH Pats. Applied for *Hypermatic* Trade Mark

***Nordstrom Valve Division*—ROCKWELL MANUFACTURING CO.**

400 North Lexington Avenue • Pittsburgh 8, Pennsylvania

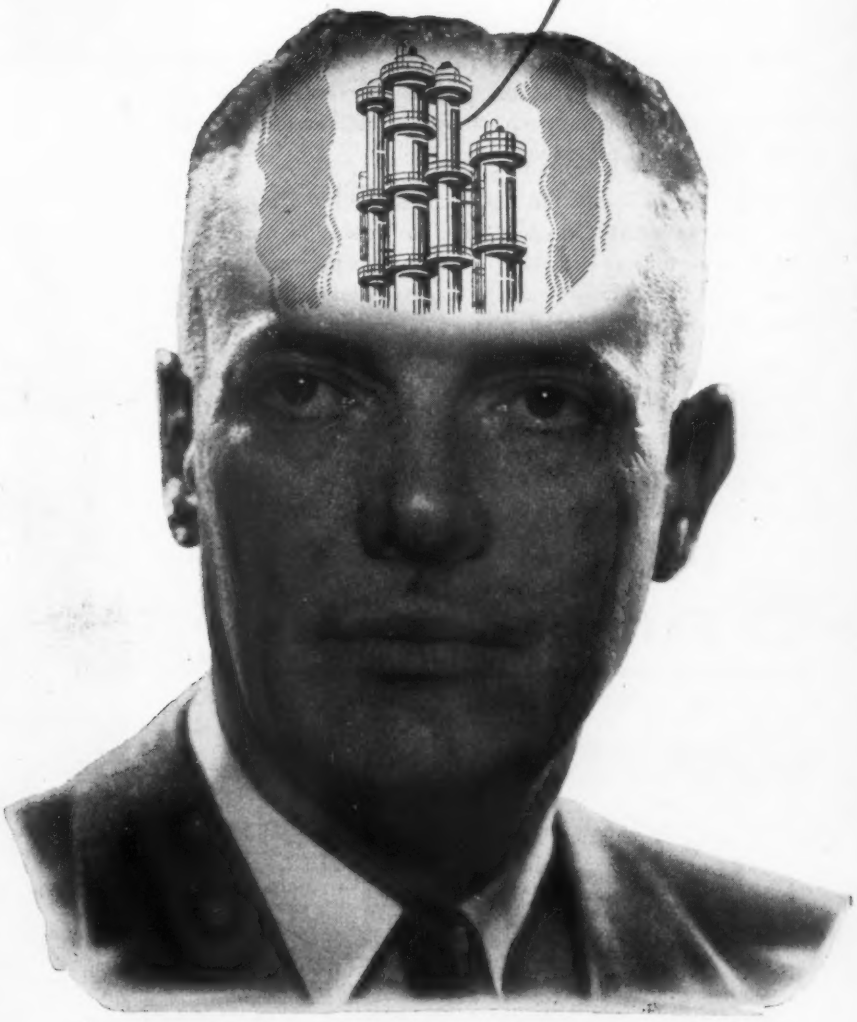
Atlanta, Boston, Chicago, Columbus, Houston, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle, Tulsa . . . and leading Supply Houses

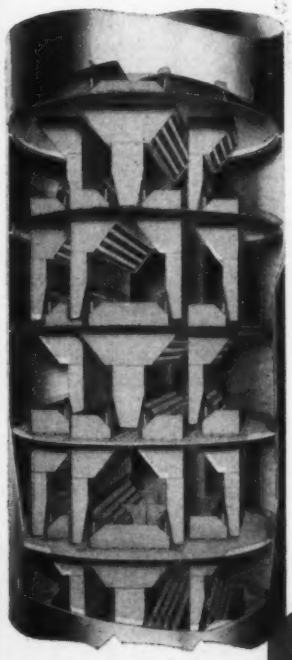
Export — Rockwell Mfg. Co., International Division, Empire State Building, New York

XUM

XUM

to the man with a fractionating problem





Give us an opportunity to solve your most difficult problems.

Because of the unlimited flexibility in its design, the Koch Kaskade fractionating tray will fit simple or out-of-the-ordinary process conditions better than any bubble tray.

For absorption, scrubbing, liquid-liquid contacting and fractionation, simply write and tell us vapor and liquid densities and loadings, and we'll be glad to give you our recommendation, without obligation.

THE KOCH ENGINEERING COMPANY, INC.

DESIGNERS • MANUFACTURERS • BUILDERS

333 WEST LEWIS STREET • WICHITA 2, KANSAS

XUM

Meet the Power behind the Pump!

● If you haven't met the Fairbanks-Morse QZK Motor, you've been missing something. This efficient unit can do *more* for your pumping equipment . . . deliver the dependable, economical power you want.

Only the QZK has the truly indestructible Copperspun Rotor that gives you the best possible operation under any permissible voltage variation . . . gives you the *most,* for its type, in handling heavy starting loads . . . takes long period, peak capacity operation.

With its unique, one-piece cast frame, the QZK is protected against falling particles and dripping liquids. Cross-flow ventilation permits operation at a uniform, cool temperature.

Get acquainted with the QZK today. See your supply store or write Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE,

a name worth remembering

OIL FIELD EQUIPMENT • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • HOME WATER SERVICE AND HEATING EQUIPMENT • RAIL CARS • FARM MACHINERY.

XUM

XUM

JUN

XUM

There's a Macwhyte rope that's the right rope . . .

For rotary drilling

For cable tool drilling

For well servicing

For pipelines

A thousand and one
WIRE ROPES
made by
MACWHYTE,
all job-proved. . .

Because your equipment is designed specially for the work you are doing, you'll get the best service by using wire rope *specially designed* for your equipment.

From the thousand and one wire ropes made by Macwhyte, you're sure to get the wire line specially designed for and suited to your needs.

The specialized experience of Macwhyte engineers is yours for the asking—to get recommendations for all your needs, just call a Macwhyte distributor or write Macwhyte Company.

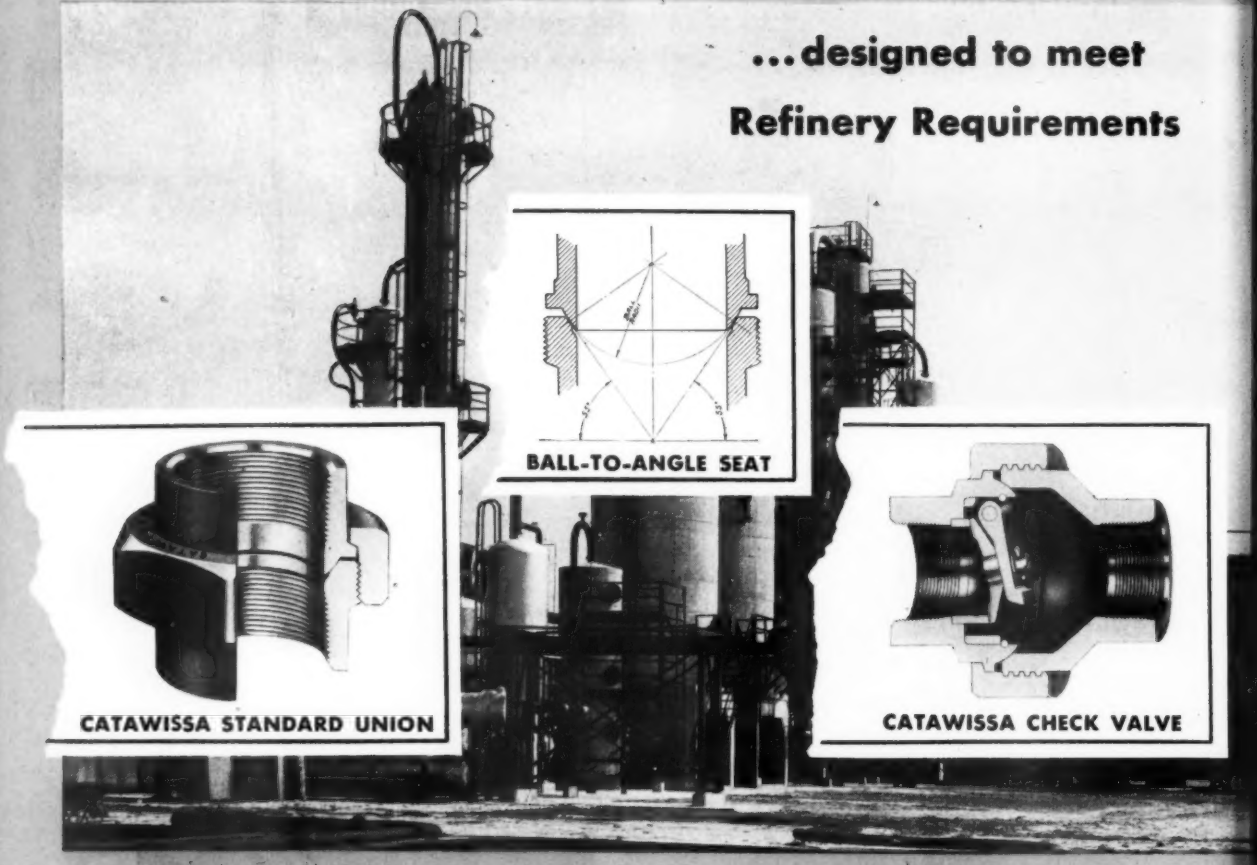
MACWHYTE COMPANY, 2916 Fourteenth Avenue, Kenosha, Wisconsin. Manufacturers of Monarch Whyte Strand PREformed, Internally Lubricated Wire Rope, Atlas Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope. Mill Depots: New York • Pittsburgh • Chicago • Minneapolis • Fort Worth • Portland • Seattle • San Francisco • Los Angeles. Catalog on request.

MS-O

XUM

Always specify "CATAWISSA" Unions and Check Valves

...designed to meet Refinery Requirements



"OILWELL'S" strategically located refinery stock points carry complete lines of Catawissa forged-steel unions and check valves that meet the most severe refinery specifications.

CHECK THESE FEATURES

HOT-FORGED . . . from solid, rectangular steel bars, Catawissa Unions are free from sand and blow holes. They will expand and contract with the pipe, assuring tight joints.

THREADS—Catawissa Unions and Valves are supplied with either full ACME threads or U. S. Standard V-threads in the union nuts and on the female end.

SEATS . . . in all Catawissa Unions are a 55° angle on the female end to a BALL on the male end, assuring a perfect seal even when the pipe is not perfectly aligned. Carefully hand-ground seats which require no packing are inspected and tested under water to assure holding qualities.

Contact your nearest "Oilwell" representative—to assist you with your refinery problems.

OIL WELL SUPPLY COMPANY

Branches Serving All Oil Fields

Executive Offices—DALLAS, TEXAS
Export Division Office—
30 ROCKEFELLER PLAZA
NEW YORK 20, N. Y.

Division Offices—CASPER, WYOMING
COLUMBUS, OHIO . . . DALLAS, TEXAS
HOUSTON, TEXAS...TULSA, OKLAHOMA
LOS ANGELES, CALIFORNIA

USS "OILWELL"

UNITED STATES STEEL

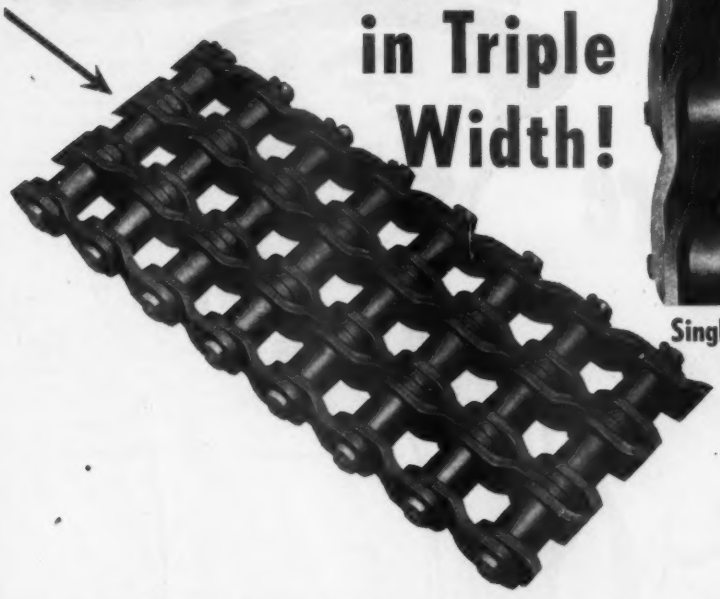
XUM

XUM

XUM

NOW!

SS-3125 HYPER ...3⅛" PITCH... in Triple Width!



Single Width

Double Width

To meet the need for a chain to withstand the heaviest of today's loads found on hoist and engine drives, Link-Belt has added the SS-3125 Hyper Triple Width. This chain, built with the same precision as the single and double widths, and using the patented solid tapered cotter, has an ultimate strength of 345,000 pounds.

LINK-BELT COMPANY

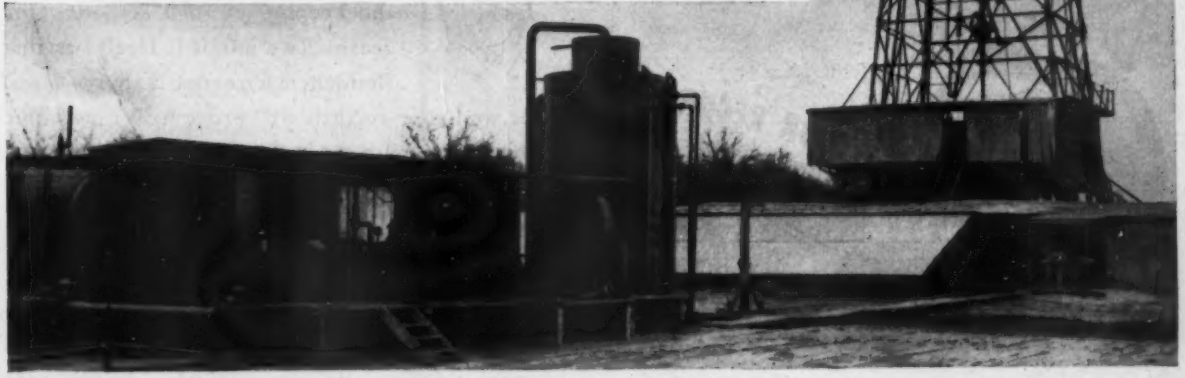
Indianapolis 6, Dallas 1, Houston 1, Kansas City 8, Mo., Los Angeles 33, New York 7, Toronto 8
Offices in Principal Cities

11,863

LINK-BELT

CHAINS AND SPROCKETS

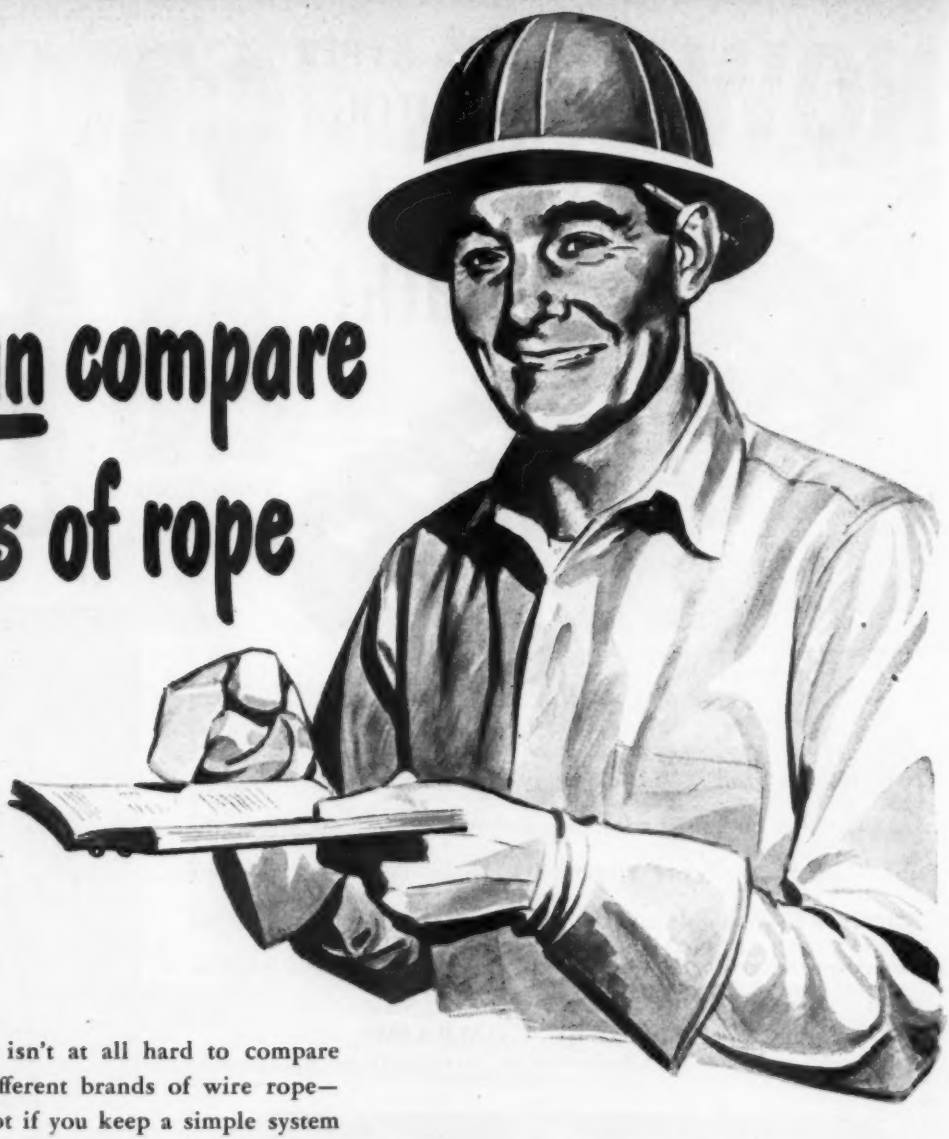
A Type for Every OIL INDUSTRY SERVICE



The Oil and Gas Journal, published Thursdays by The Petroleum Publishing Company. Entered as second-class matter September 1, 1910, at post office at Tulsa, Okla., under act of March 3, 1879. U. S. and foreign rates to the petroleum industry, $3 yearly. Copyright 1950.

XUM

You can compare brands of rope



It isn't at all hard to compare different brands of wire rope—not if you keep a simple system of records.

These records should, of course, show the work totals done by your wire ropes during their lifetime. Pick as a basis the unit of work most applicable to your line of business—a ton-mile, for instance, in oil-country drilling; a cubic yard of rock moved; a car of coal hauled up a slope, etc. When the ropes have finally been retired from service, see how much—or how little—their cost has been per unit of work.

Bethlehem has always advocated the keeping of such records. One reason (we admit it freely) is that Bethlehem wire rope is an *economical* rope, and your records will prove it. We welcome comparisons with anybody's product.

BETHLEHEM WIRE ROPE

BETHLEHEM STEEL

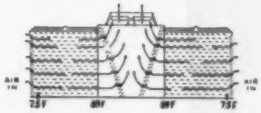
LET YOUR RECORDS TELL YOU!

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

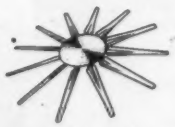
OPEN DISTRIBUTION SYSTEM

Double-Flows always operate at top efficiency because the water distribution system is available. Water flow to each cell is easily regulated . . . cleaning, a matter of minutes.



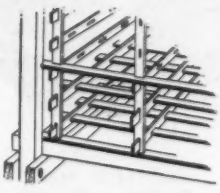
COLDER WATER

Water falling near the louvered side walls is at near wet bulb temperature. Only Double-Flow, with its cross-flow design, can give this extra-cold water.



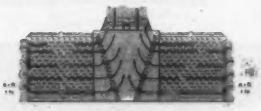
MULTIBLADED FANS

Vibration and "rough operation" caused by air pulsations are prevented by the use of multibladed fans. These large rugged, multibladed fans insure longer tower life.



NAIL-LESS FILLING

No warped, twisted or sagged filling because filling members are free to expand and contract in a definite pattern. This nail-less filling has been field-proven during the past decade.

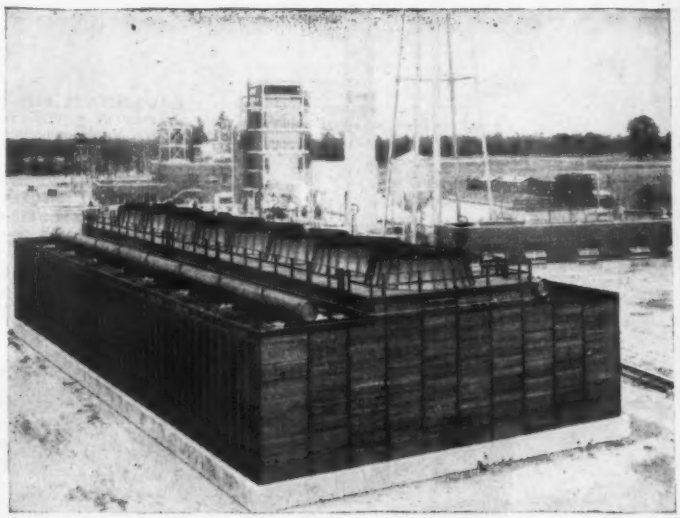


NO AIR CHANNELING

No "dead spots" caused by air streaming from small louvered openings to the fan. Full height louvered walls assure intimate air-water contact in all parts of the cooling chamber.

At No Extra Price

On The Marley Double-Flow



AND, that's not all . . . you also get rugged Marley Geareducers, heart quality redwood lumber, ring connectors, more square feet of drift eliminators, more wetted surface per cubic feet, regulator valves on each cell, bolted compression-system diagonals with full bearing at each end, no nozzle pressure required, less pumping head, walkways, shiplap double wall casing and many other features.

Marley research and development is continually at work bringing out new ideas—setting a higher standard for the cooling tower industry.

Get these important features on your next cooling tower. They are standard on the Marley Double-Flow . . . *at no extra price.*

MAIL THIS COUPON TODAY

The Marley Company, Inc., Kansas City 15, Kansas

☐ Please send me without cost or other obligation Bulletin DF-50.

☐ Have Marley Application Engineer call.

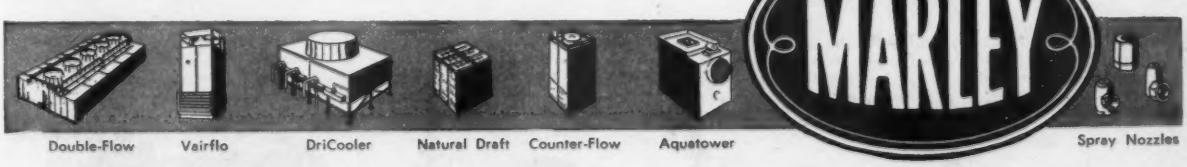
DG-62

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____



XUM

EMSCO

LESS WEIGHT
GREATER RIGIDITY

D SERIES SLUSH PUMPS

GEARING. Demountable forged alloy steel herringbone gears eliminate necessity of adjustable thrust bearings and provide quiet and efficient speed reduction. Main gear and pinion run on heavy duty roller bearings.

CROSSHEADS AND GUIDES. Crossheads run on renewable guides. Heavy duty needle roller bearings are used in crosshead pin assembly.

FABRICATED STEEL POWER END. Fabriform construction provides an extremely rigid, strong and compact unit. All steel construction considerably reduces pump weight and overall dimensions.

STUFFING BOX COMPARTMENT. Piston rod connects to crosshead extension in large, open compartment for easy piston rod replacement. Power end fully protected against intrusion of mud.

DIRECT FLOW DESIGN. Full openings and large passages permit free, unobstructed fluid flow. This direct flow design assures low fluid velocities and highest volumetric efficiency.

LUBRICATION. All running parts are flood-lubricated by a positive-splash system, eliminating troublesome grease and drip lubrication systems. Large diameter, high-capacity roller bearings assure long, trouble-free operation.

SETTLING CHAMBER. A settling chamber is provided directly under crosshead guides. All oil passes through chamber before returning to crank case. Suitable drains are provided.

ECCENTRIC ASSEMBLY. One piece eccentric strap equipped with roller bearings at both ends assures quiet, efficient and trouble-free operation. Entire assembly is flood-lubricated from main oil bath.

"EXPOSED" LINER. Fluid liners are packed off at both ends and exposed to view. This patented construction permits immediate and unfailing detection of mud leakage before serious washouts can occur. Liners can be easily removed as they cannot become locked by sand.

CAST STEEL FLUID END. Electrically welded, cast steel fluid end provides maximum strength with minimum weight.

Compare Emsco D Series Slush Pumps with any other slush pump in the market. Compare design . . . performance . . . efficiency . . . weight per horsepower . . . portability . . . or any other standard for measuring slush pump value. Make these comparisons and you'll find that pound for pound, feature for feature, Emsco D Series Slush Pumps are the *outstanding buy*. For here are pumps engineered with the built-in rigidity and ruggedness for trouble-free service under severe operating conditions, yet they maintain the light weight, efficiency and portability so necessary for today's economy-minded drilling programs.

SEE OUR CATALOG IN THE COMPOSITE CATA
PAGES 1437 TO 1556

EMSCO DERRICK & EQUIPMENT COMPANY

Houston, Texas • LOS ANGELES, CALIFORNIA • Garland, Texas

EMSCO

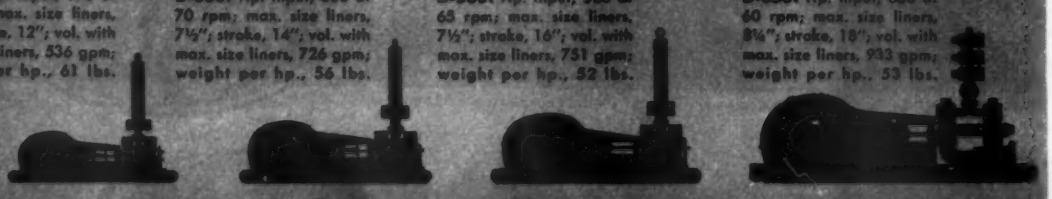
A SIZE TO MEET ALL DRILLING REQUIREMENTS

D-175: Hp. input, 175 at 75 rpm; max. size liners, 6¼"; stroke, 12"; vol. with max. size liners, 536 gpm; weight per hp., 61 lbs.

D-300: Hp. input, 300 at 70 rpm; max. size liners, 7½"; stroke, 14"; vol. with max. size liners, 726 gpm; weight per hp., 56 lbs.

D-500: Hp. input, 500 at 65 rpm; max. size liners, 7½"; stroke, 16"; vol. with max. size liners, 751 gpm; weight per hp., 52 lbs.

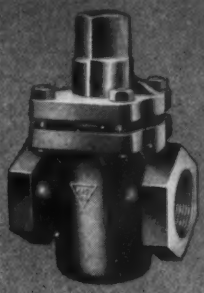
D-850: Hp. input, 850 at 60 rpm; max. size liners, 8¼"; stroke, 18"; vol. with max. size liners, 933 gpm; weight per hp., 53 lbs.



XUM

more and better service from

R·P&C VALVES



...here's One Reason Why:

Over 60 years ago, a PRATT & CADY Board of Directors passed this resolution:

Resolved:

"That the superintendent
"shall be held responsible
"for the production of goods
"as near perfect in design,
"material and workmanship
"as shall make them merchantable
"and of a character that will serve
"to establish for this company
"a high reputation."

• This policy has remained unshaken through two world wars. The "high reputation" has been maintained. More than ever before, the valves offered by R·P&C meet the demand for longer and better service.

ACCO

Reading, Pa. • Atlanta • Baltimore • Boston • Chicago • Denver • Detroit • Houston
New York • Philadelphia • Pittsburgh • San Francisco • Bridgeport, Conn.

R-P & C VALVE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

READING-PRATT & CADY VALVES

XUM

As rotary drilling lines, Roebling 6x19 Preformed "Blue Center" Steel Wire Rope with Independent Wire Rope Core has demonstrated extra life on the job and substantial dollar savings.

Preformed that lasts longer and saves money!... that's why

Today it's Roebling!

YOU WANT ROPE that's *extra* tough, *extra* strong, *extra* long-lived! And you *get* these extras in Roebling Preformed "Blue Center" Wire Rope, for "Blue Center" steel has completely superior resistance to abrasion, shock and fatigue. Roebling developed and is the only maker of "Blue Center" steel... and Roebling research, workmanship and modern, precision machines are your added assurance of rope quality that pays off.

But for everything wire rope can give, be sure to get Preformed. Roebling Preforming makes rope easier to handle and install. It can be cut without seizing. It spools better . . . is not inclined to set or kink . . . minimizes vibration and whipping.

There's a Roebling wire rope of the right construction, grade and size for every type and make of rope-rigged equipment. Have your Roebling Field Man tell you which rope will give the best and the lowest-cost performance for every installation. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

A CENTURY OF CONFIDENCE

DISTRIBUTED BY
THE NATIONAL SUPPLY COMPANY
REPUBLIC SUPPLY COMPANY

4-Wheel-Drive

Reaches Every Part of the Lease

In field after field—under all kinds of conditions—the 4-Wheel Drive Universal 'Jeep' is providing low-cost assured transportation the year 'round. Operators know that when the 'Jeep' starts out for any part of the lease, it gets there.

Rugged all-wheel traction takes the 'Jeep' over mud and sand, rough and rocky hills—through conditions too tough for ordinary vehicles. The 'Jeep' is built to stand up day in and day out in every phase of oil field service, from exploration and production to lease maintenance.

Ask your nearby Willys-Overland dealer for full details on how the Universal 'Jeep' can save you time and money.

4-Wheel-Drive UNIVERSAL 'Jeep'

WILLYS-OVERLAND MOTORS, TOLEDO 1, OHIO • MAKERS OF AMERICA'S MOST USEFUL VEHICLES

XUM

Here's WHY Axelson is First Choice

THOROUGH TESTING
Steel for Axelson sub-surface equipment must meet rigid requirements. Checks and double checks at this point eliminate many fishing jobs and down time later on.
PRECISION MANUFACTURE
Square shoulders and accurate threads mean better performance, longer life. Precision tools; close manufacturing supervision.
FIELD PERFORMANCE
In the field you really cash in on Axelson experience and manufacturing integrity. Axelson engineers, eager to help with unusual problems, can be reached through your Jones & Laughlin Supply store.

Axelson experience: 55 years. Every year Axelson customers reap a new harvest of benefits. Field observations of sub-surface production equipment are mixed by Axelson with technical know-how to make better rods and pumps.

The more exacting the customer, the more likely he is to make Axelson his choice—his only choice.

To buy sub-surface equipment at your Jones & Laughlin Supply store GUARANTEES Axelson advantages—practical and technical advantages developed over 55 years.

★ ★ ★

NEVER JUNK AN AXELSON PUMP. Its useful life can be prolonged indefinitely—and economically—by the Axelson Pump Repair Shops in Jones & Laughlin Supply stores.

"... here's MY warehouse!"

Jones & Laughlin Supply Company

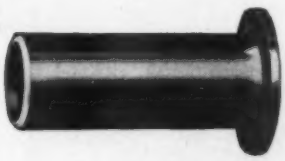
Subsidiary of Jones & Laughlin Steel Corporation

J&L STEEL

TULSA, OKLAHOMA

EXPORT: 230 Park Ave., New York 17, N.Y., U.S.A.

TO DO A BETTER PIPING JOB...



USE
GLOBE
PRECISION PROCESS
SEAMLESS WELDING FITTINGS

Your preference for Globe Welding Fittings is supported by a source of supply with exceptional qualifications. Specialized metallurgical experience and facilities gained in years of steel tubing manufacture enable Globe to produce welding fittings by a precision process that yields a superior product.

Send for the Globe Welding Fittings Catalog No. 501.

GLOBE STEEL TUBES CO., Milwaukee 15, Wisconsin

Chicago — Cleveland — Detroit — New York — Philadelphia — St. Louis — Tulsa — Houston — Denver — San Francisco — Glendale, Calif.

Producers of Globe Seamless Stainless Steel Tubes —Gloweld Welded Stainless Steel Tubes—Carbon — Alloy — Seamless Steel Tubes — Globeiron Seamless High Purity Ingot Iron Tubes and Pipe.

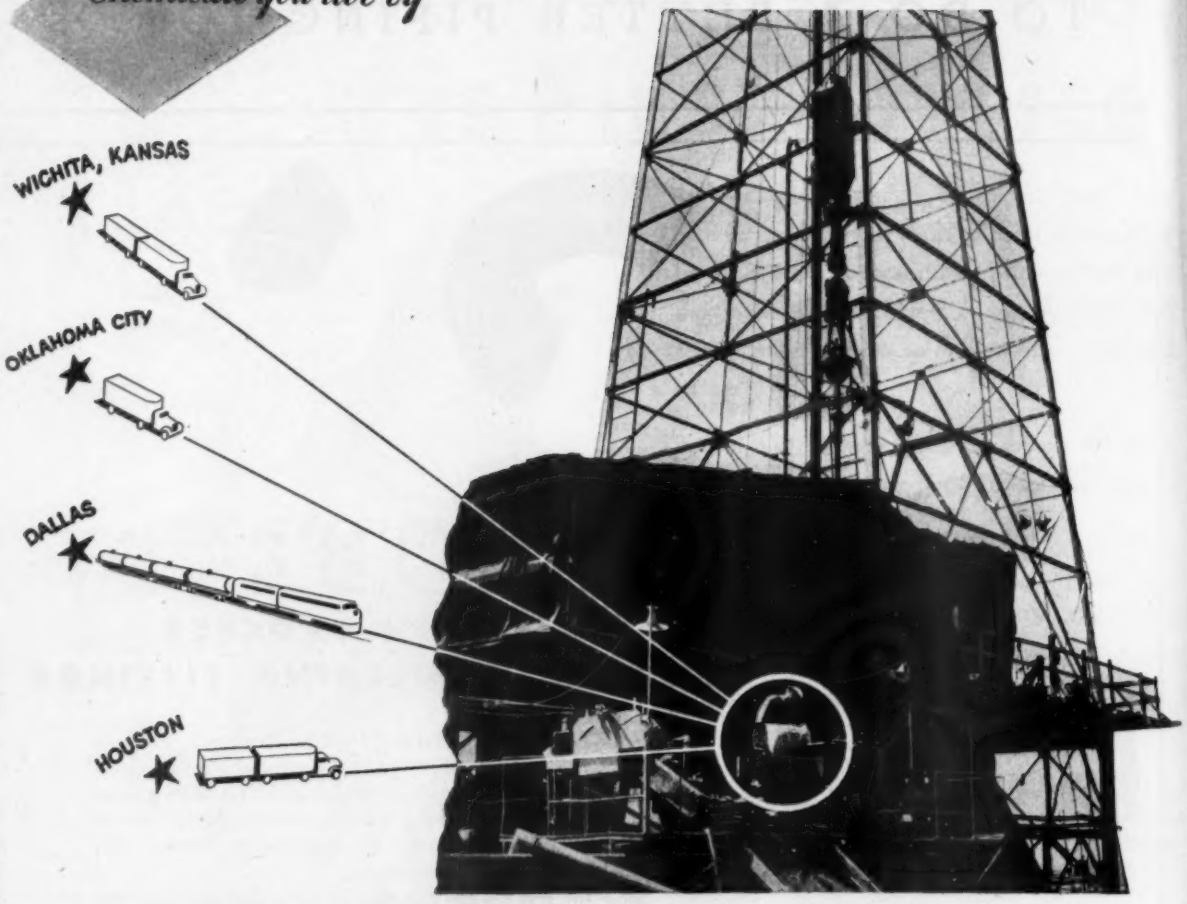
SIZE RANGE OF GLOBE SEAMLESS WELDING FITTINGS

Description of Fitting	Standard Weight (Schedule 40)	Extra Strong (Schedule 80)	(Schedule 160)	Double Extra Strong
Elbows 45° Long Radius	½ in. to 24 in.	¾ in. to 24 in.	1 in. to 12 in.	1 in. to 8 in.
Elbows 90° Long Radius	½ in. to 24 in.	¾ in. to 24 in.	1 in. to 12 in.	1 in. to 8 in.
Elbows 90° Short Radius	1 in. to 24 in.	1½ in. to 24 in.	- - -	- - -
Returns 180° Long Radius	½ in. to 24 in.	1 in. to 24 in.	1 in. to 12 in.	3 in. to 8 in.
Returns 180° Short Radius	1 in. to 24 in.	1½ in. to 24 in.	- - -	- - -
Reducers (Concentric and Eccentric)	1 x ⅜ in. to 24 x 20 in.	1 x ⅜ in. to 24 x 20 in.	1 x ⅜ in. to 12 x 10 in.	1 x ⅜ in. to 12 x 10 in.
Tees Straight	¾ in. to 24 in.	¾ in. to 24 in.	1 in. to 12 in.	1 in. to 8 in.
Tees Reducing Outlet	¾ in. to 24 in.	¾ in. to 24 in.	1 in. to 12 in.	1 in. to 8 in.
Stub Ends Lap Joint	1 in. to 24 in.	1 in. to 24 in.	- - -	- - -
Caps	1 in. to 24 in.	1 in. to 24 in.	1 in. to 12 in.	1 in. to 8 in.

Flanges available 1 inch to 24 inches in all weights

XUM

Chemicals you live by



BEHIND GOOD DRILLING MUD SERVICE

Oil field chemical dealers and mud service companies are depending now—more than ever before—on DIAMOND ALKALI facilities to maintain their service to the drilling trade.

These manufacturing facilities in the Southwest consist of DIAMOND's Caustic Soda plant at Houston and DIAMOND's Silicate of Soda plant at Dallas. Distributing warehouses for DIAMOND Chemicals are maintained at Houston, Dallas, Oklahoma City and Wichita where these Diamond products are carried in stock:

- FLAKE CAUSTIC SODA, SODA ASH AND BICARBONATE OF SODA —all in daily use as drilling mud control agents.
- SODIUM BICHROMATE AND SODIUM CHROMATE—mud additives for controlling corrosion-fatigue of drill pipe.
- DIAMOND OIL WELL GRADE (DI SILICATE) SILICATE OF SODA—for use in heaving shale areas (licensed under Texaco Development Corporation patents). From Dallas only.

Behind your oil field chemical dealer and mud service company stands the DIAMOND organization in the Southwest anxious to expedite deliveries and supplies in any emergency.

Whether you are nearest to Houston, Dallas, Oklahoma City or Wichita, Kansas, you can obtain all of the above DIAMOND Chemicals promptly from warehouse stocks at those points. We welcome your inquiries.

DIAMOND SALES OFFICES: Boston, New York, Philadelphia, Pittsburgh, Cleveland, Cincinnati, Chicago, Memphis, St. Louis and Houston. Also representatives in other cities.

DIAMOND CHEMICALS FOR THE OIL INDUSTRY

DIAMOND ALKALI COMPANY...CLEVELAND 14, OHIO

DIAMOND ALKALI CHEMICALS

built for ONE job ...DRILLING

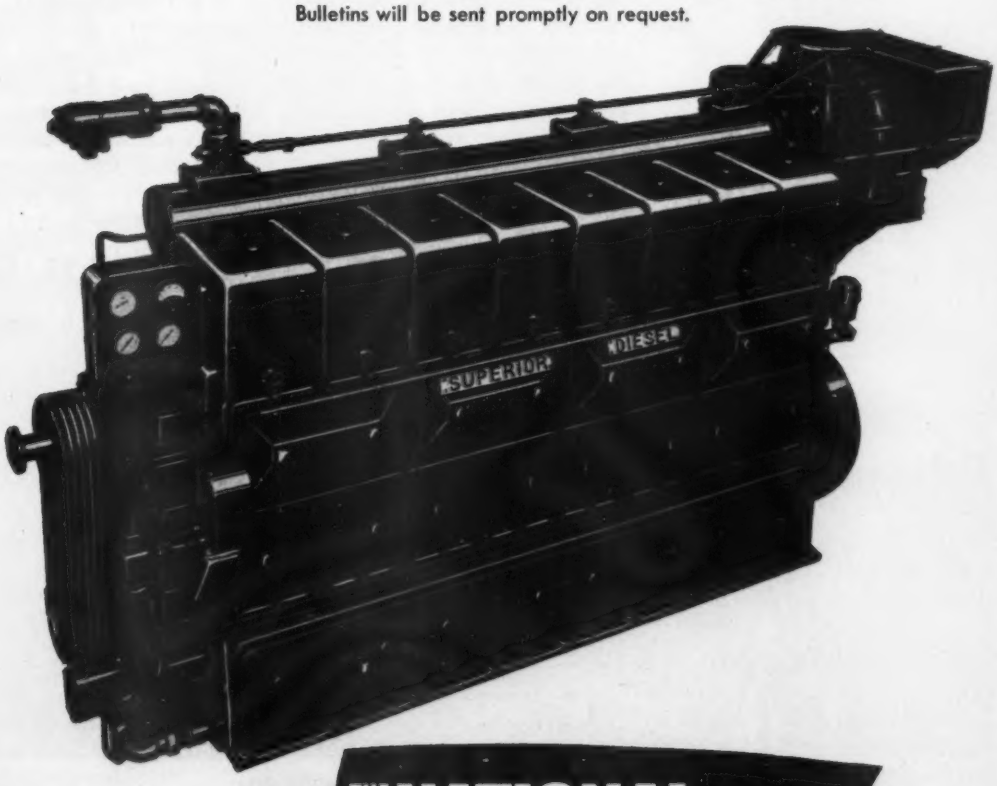
Rotary drilling punishes an engine . . . variations in load, fast acceleration and deceleration, cross-country moves, variations in climate and altitudes . . . Superior PTD Engines are specially designed to withstand all these rigors of drilling service.

Conservative rating of Superior engines provides a reserve of horsepower to handle drilling jobs dependably at sea-level or mountain altitudes, in tropic heat or arctic cold.

Maximum interchangeability of parts between Superior 6 and 8 cylinder engines eases your spare-parts needs. Fast, low-cost maintenance, even while operating, is a money-saving characteristic of all Superiors. Continent-wide Superior field and parts service helps keep your power plant operating efficiently.

Superior PTD's are available in 6 and 8 cylinders, with ratings from 460 to 620 horsepower, supercharged or naturally aspirated.

Bulletins will be sent promptly on request.



THE NATIONAL SUPPLY COMPANY

GENERAL SALES OFFICES: TOLEDO, OHIO

NATIONAL BLUE PRODUCTS

NATIONAL OIL FIELD MACHINERY AND EQUIPMENT
SPANG PIPE . . . SUPERIOR ENGINES

DIVISION OFFICES: CASPER; FT. WORTH; PITTSBURGH; TULSA; TORRANCE.

CANADA: THE NATIONAL SUPPLY COMPANY, LIMITED, ROOM 202, ALBERTA BLOCK, CALGARY, ALBERTA.

EXPORT: NATIONAL SUPPLY EXPORT CORPORATION, 30 ROCKEFELLER PLAZA, NEW YORK, N. Y., U. S. A.; RIVER PLATE HOUSE, 12 SOUTH PLACE, LONDON E.C.2.

XUM

BARRETT* PROTECTIVE PRODUCTS
COVER EVERY PIPE-COATING NEED

1 Pipeline Enamel
2 Millwrap Enamel
3 A.A. Enamel
4 Asbestos Felt
5 Materials for Special Uses

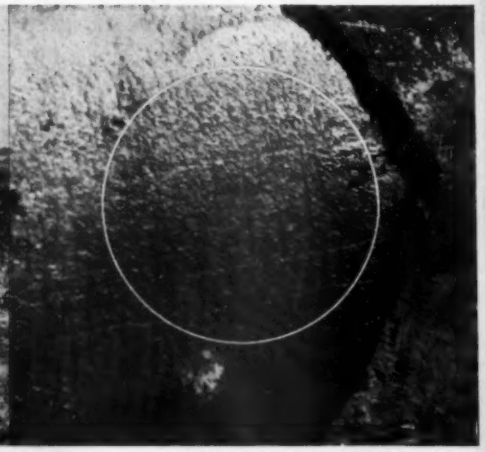
BARRETT* PIPELINE ENAMEL

After more than 20 years' use under the most widely varying conditions, Barrett* Pipeline Enamel has conclusively demonstrated its ability to protect pipe lines against corrosion. When used properly, the need for constant inspection by line walkers is practically eliminated, as far as leaks from corrosion are concerned.

Barrett Pipeline Enamel is reinforced with inert flake minerals which provide toughness and maximum resistance to underground stress effects. It is non-absorbent, and is impermeable by soil waters. Like other Barrett coal-tar enamels, it is practically unaffected by soil composition or bacteria. It can be depended upon to give uniformly satisfactory service under the most punishing conditions of underground service.

HERE'S PROTECTION THAT PROTECTS!

This line was protected in 1927 with Barrett Pipeline Enamel. When taken up for relocation 16 years later, the steel was found to be free from corrosion.



Note how clearly visible the original mill knurl marks are in this unretouched enlargement.

Memo: **FOR CORROSION ENGINEERS**

Barrett coal-tar materials for special uses are all dependable, durable and economical. Eternium* Paint for exposed metal work. CA-50 Heavy Duty Cold Application coating for concrete and metal exposed to extremely corrosive conditions. Marine Enamel for ships, barges and off-shore service vessels. Service Cement and Pipeline Fabric for field joints — no torching required. Asbestos Pipeline Felt for soil stress shield. Tank Bottom Compound for sour crude storage. 34 YB Paint for exposure to salt water spray conditions.

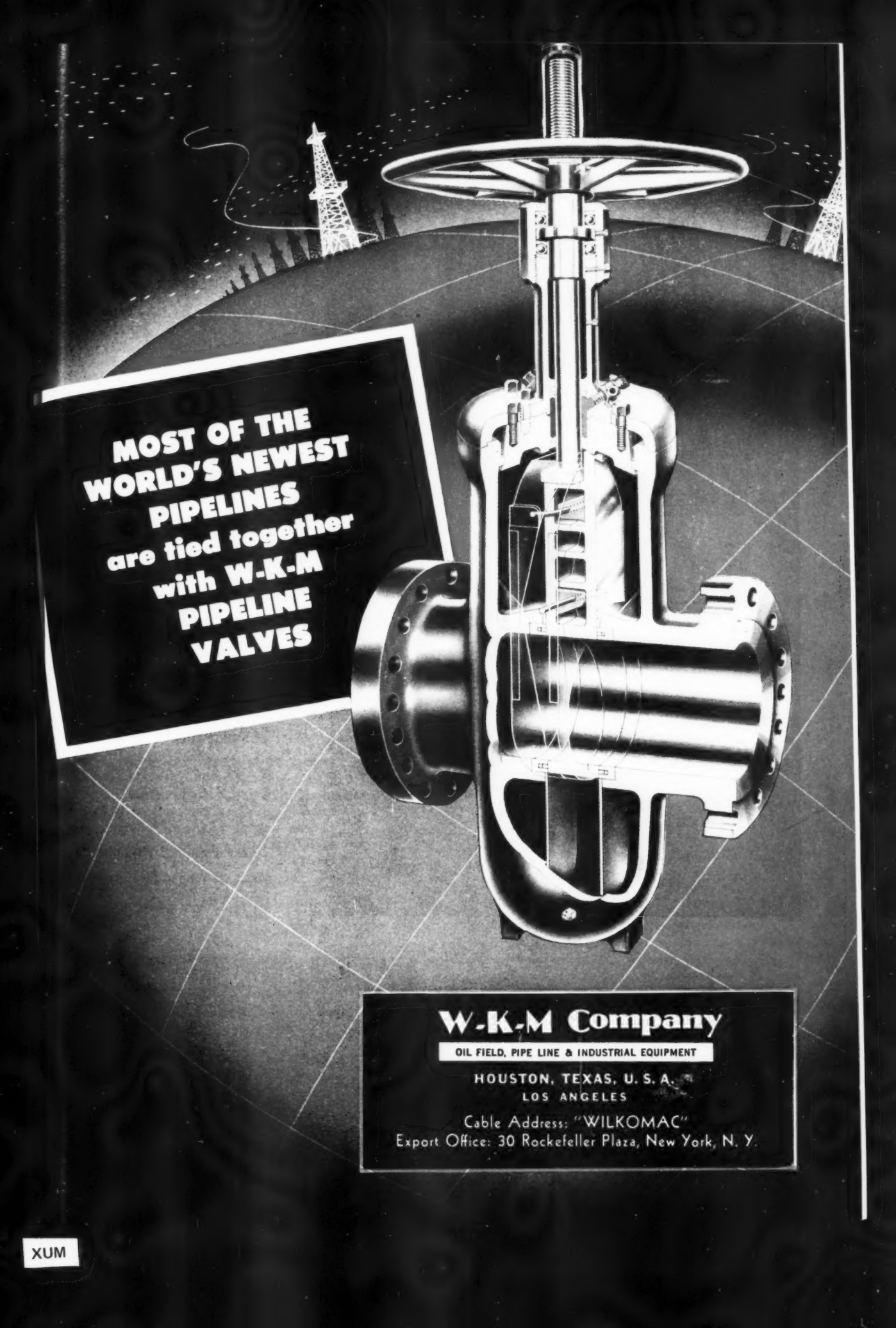
Barrett*

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

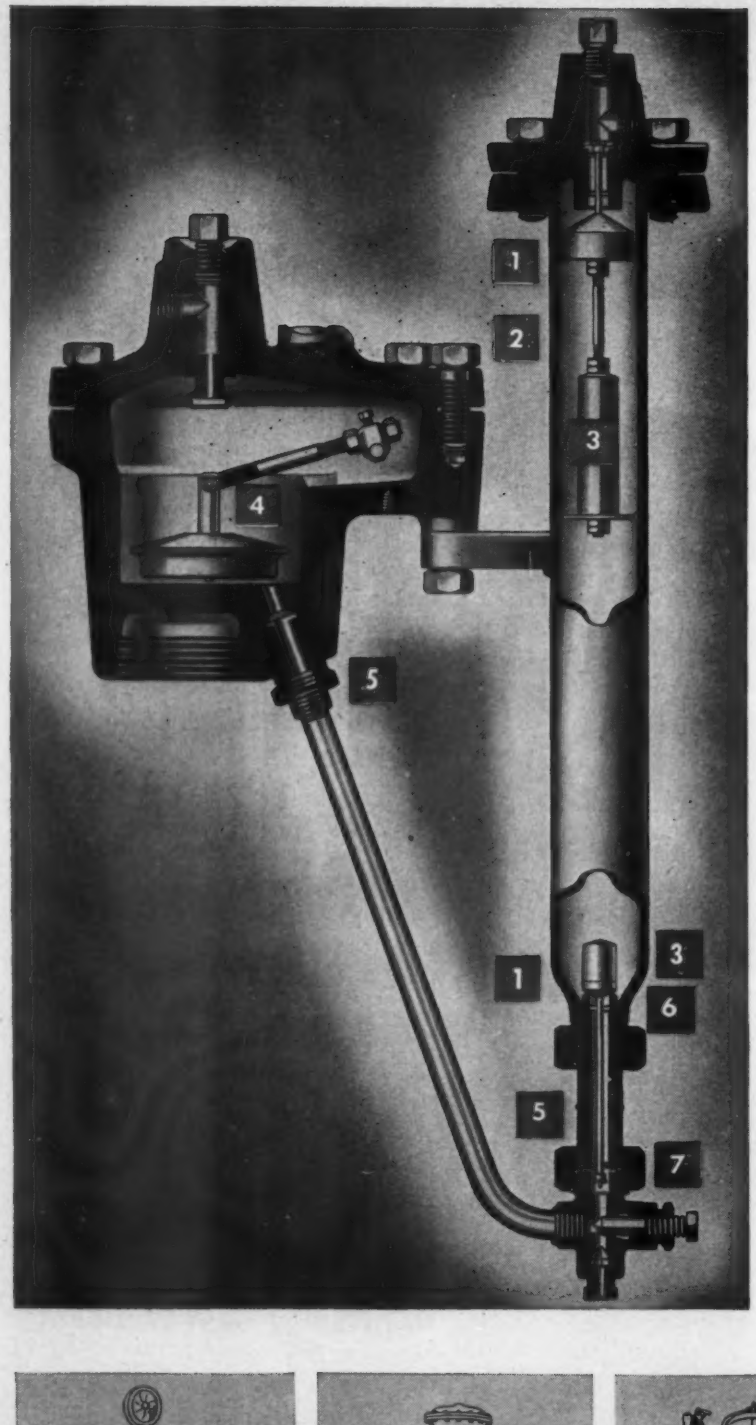
*Reg. U. S. Pat. Off.

XUM

XUM

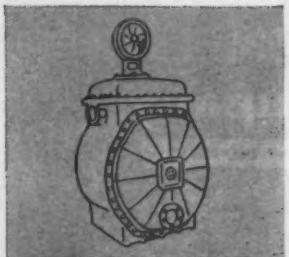

MOST OF THE WORLD'S NEWEST PIPELINES are tied together with W-K-M PIPELINE VALVES
W-K-M Company
OIL FIELD, PIPE LINE & INDUSTRIAL EQUIPMENT
HOUSTON, TEXAS, U. S. A.
LOS ANGELES
Cable Address: "WILKOMAC"
Export Office: 30 Rockefeller Plaza, New York, N. Y.

XUM

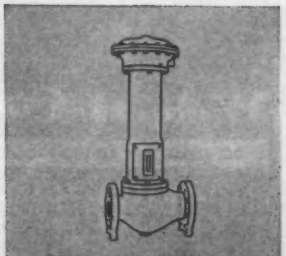


A NEW
for 1500

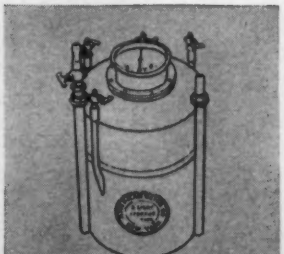
1. **New Mercury Check Valves Stainless Steel Seats**
2. **Extended Hi-Side. Prevents Loss of Mercury on Reverse Flows**
3. **Plastic Check Valve Floats**
4. **Float in Low Side for Convenient Adjustment**
5. **Union Type Connections for Interchangeability of Range Tubes**
6. **Swaged Hi-Side Tube**
7. **New Pulsation Dampener**



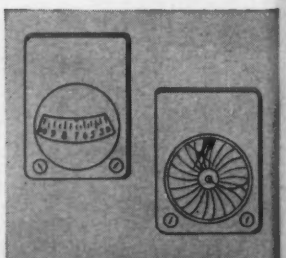
HIGH PRESSURE IRONCASE METERS
(Bulletin EG-40)



RELIANCE CBVA MOTOR VALVES
(Bulletin 50-A)



DRY TEST METERS
(Bulletin AG-3)



PNEUMATIC TRANSMITTERS AND RECEIVERS
(Bulletin CT-49)

ORIFICE METER

p.s.i. Working Pressure

Among the important operating and service improvements embodied in the American METRIC A-88 Series Orifice Meters are the following:

The mercury float is in the low side chamber, which permits cleaning and calibration with low side cover removed

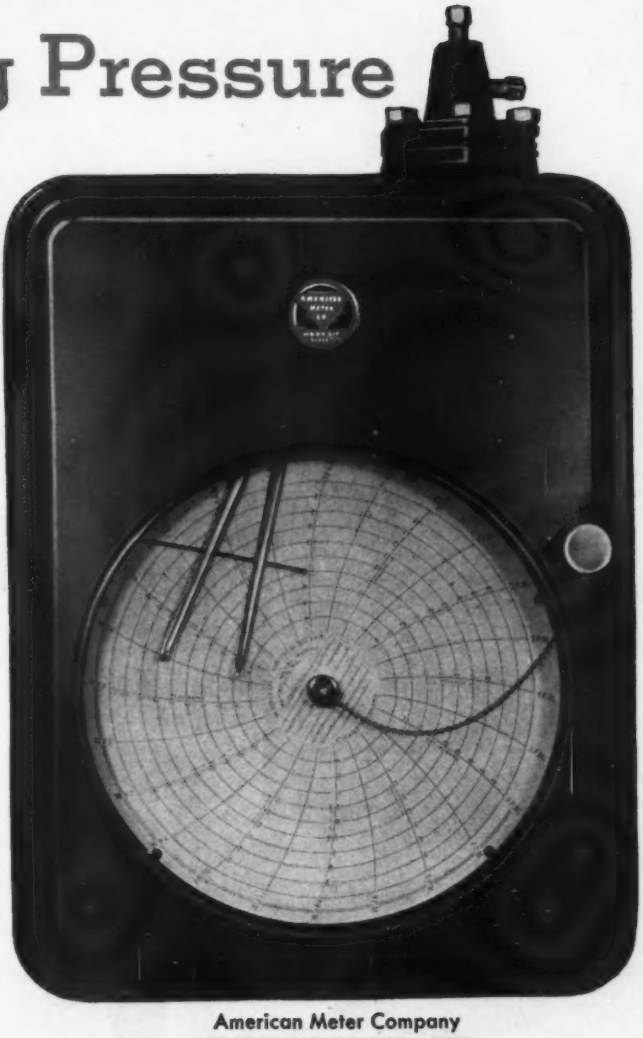
Union type seal tube connections permit interchanging 20", 50", 100" and 200" ranges. Other ranges up to 800" available

Over-range protection is provided by submerged check valve with long guided stem and stainless steel seat

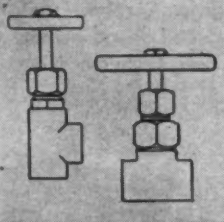
Under-range protection is provided by check valve with stainless steel seat and plastic float in extended high-side chamber

A new Teflon sealed stuffing box with monel shaft requires no grease or other lubrication furnished upon request

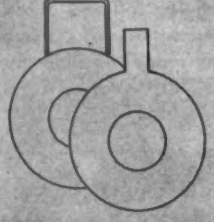
A-88 Series Orifice Meters will handle tough measurement problems. They are rugged, yet simple. They are particularly suitable for applications which must function properly where service inspections may be few and far between. They maintain the American Meter Company tradition of "*sustained accuracy at lower cost.*" Write for Bulletin.



American Meter Company
RECORDING ORIFICE METER
Diff. Range Inches of Water 10—20—50—100—200
Pressure Springs available for all applications



NEEDLE VALVES, SCREWED AND UNION BONNET
(Specification Sheet)



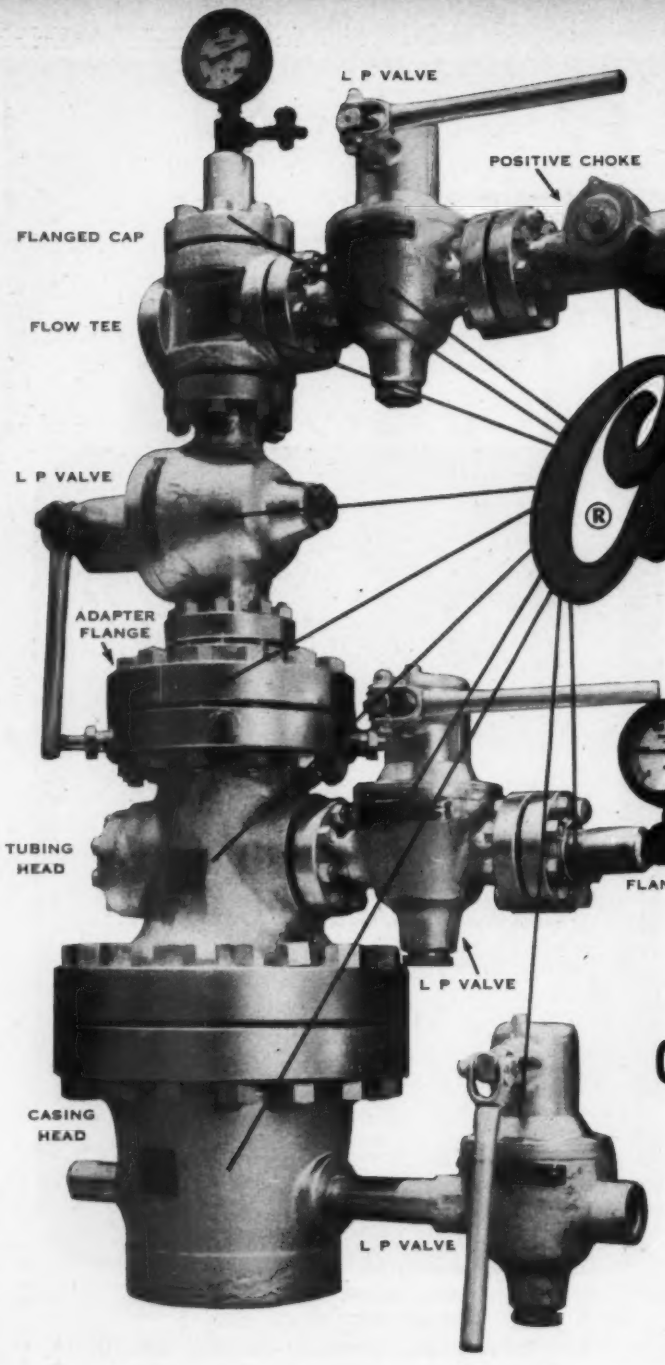
ORIFICE PLATES AND ORIFICE FLANGES
(Bulletin EG-2)

AMERICAN METER COMPANY

INCORPORATED (ESTABLISHED 1836)

60 East 42nd Street • New York 17, N. Y. • Albany • Alhambra
Atlanta • Baltimore • Birmingham • Boston • Chicago
Dallas • Denver • Erie • Fort Lauderdale • Houston
Joliet • Kansas City • Los Angeles • Minneapolis • Odessa
Philadelphia • Pittsburgh • San Francisco • Tulsa
In Canada—Canadian Meter Co., Ltd., Hamilton, Ontario

XUM



FROM TOP TO BOTTOM-

Cameron® FORGED STEEL

Featuring the New

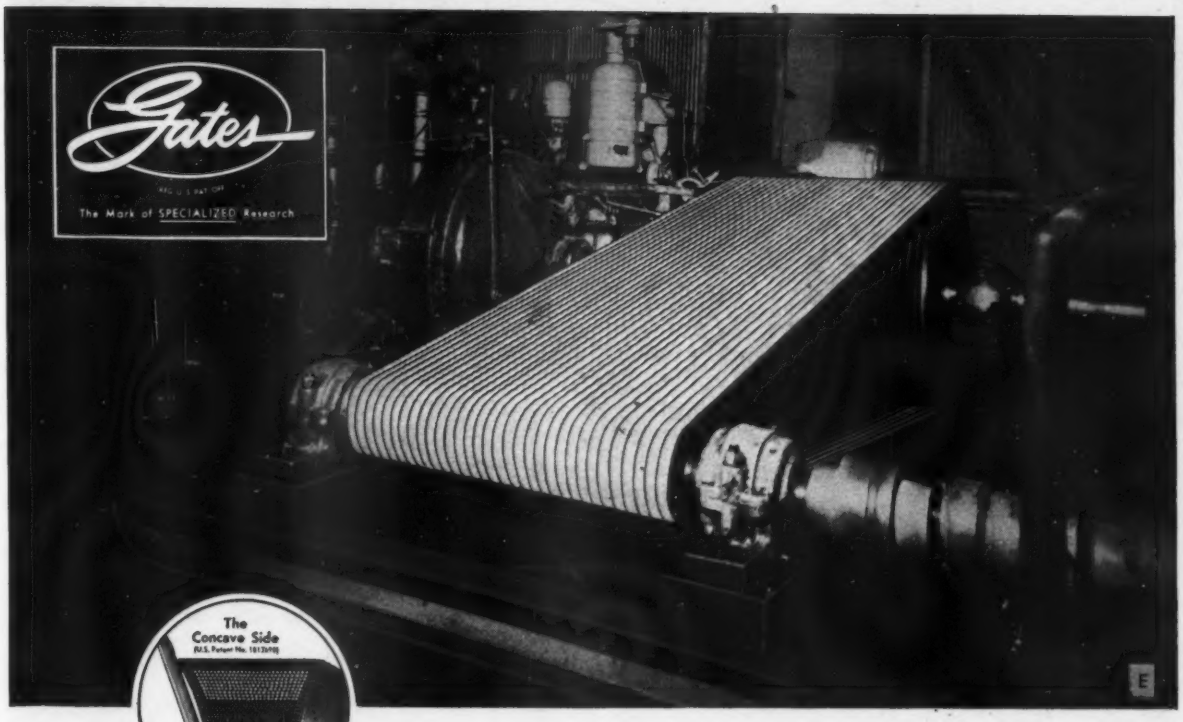
CAMERON NON-LUBRICATED LIFT-PLUG VALVE

Cameron Christmas trees, always a good buy, are now truly the outstanding value in the field. From top to bottom, every component part of today's Cameron tree is forged from selected alloy steel in the ultra-modern Cameron forge shop. Never before has any manufacturer offered the industry a completely forged steel Christmas tree manifold, with the superior metallurgical features that only forged steel provides. Never before has Cameron offered the industry a Christmas tree assembled entirely of Cameron products . . . an accomplishment made possible by the new Cameron Non-Lubricated "LP" Valve.

Cameron® IRON WORKS, INC.

P. O. BOX 1212 • HOUSTON, TEXAS

EXPORT: 74 TRINITY PLACE, NEW YORK, N. Y.



The cylinder at the right houses a 75-stage centrifugal pump. It requires 112 H.P., turns at 36000 r.p.m., and maintains a 1925-ft. head in an oil field water repressuring project. The belt speed is high, nevertheless, the Gates Vulco Rope Drive is doing a fine job, say the owners.

Here is exactly ***WHY*** the Concave Side Saves You Money in V-Belt Costs

When *any* V-belt bends in going around its pulley, it is forced to *change* its *shape.*

Naturally so, because the top of the belt is under tension and grows *narrower* while the body, under compression, *bulges out!*

This change of shape in a *straight-sided* V-Belt, is shown in figures 1 and 1-A—and you will note how the bulging sides press *unevenly* against the V-pulley.

Now look at figures 2 and 2-A. There you see how this change of shape, due to bending, affects the belt that is built with the Concave Side—the Gates Vulco Rope. The precisely engineered Concave Side exactly corrects the side-bulge—and the bent belt *has a shape that exactly fits its sheave groove!*

Two distinct savings result. *First*—There is no side-bulge to cause uneven wear. The sides press *evenly* against the V pulley and therefore wear *uniformly*—resulting in *longer life!* Second—The *full width* of the sidewall grips the pulley—thus carrying heavier loads without slippage—and this *saves belts* and also saves *power!*

When you buy V-Belts, be sure you get the V-Belt with the Concave Sides... the Gates Vulco Rope!

What Happens When a V-Belt Bends

Straight-Sided V-Belt

How Straight Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear at Point Shown By Arrows.

Gates Vulco Rope with Concave Side

No Side Bulge. Precise Fit in Sheave Groove. Sides Press Evenly Against V-Pulley—Uniform Wear—Longer Life!

CS-505

THE GATES RUBBER COMPANY
DENVER, U.S.A.
The World's Largest Makers of V-Belts

GATES VULCO ROPE DRIVES
Engineering Offices and Jobber Stocks IN ALL INDUSTRIAL CENTERS of the U. S. and 71 Foreign Countries

XUM

Announcing four new stores to serve our customers. These stores will carry the same famous lines that have made United stores, everywhere, headquarters for oil field supplies. As in all our stores, you'll find experienced, courteous men on the job ready to serve you day or night. Buy from United and you buy the BEST . . . in products and service!

Uncle Sandy

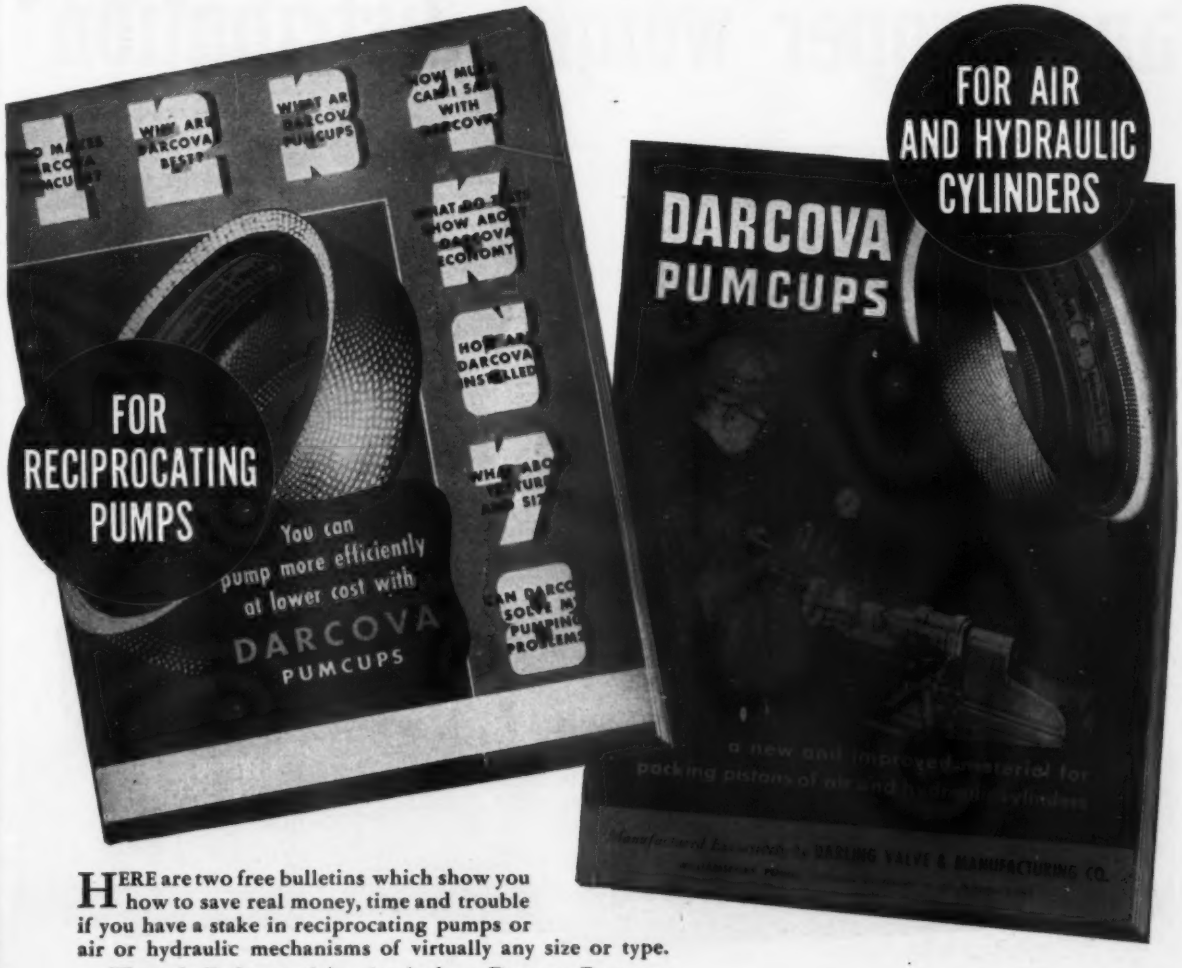
THE UNITED SUPPLY MAN

Courtesy
Service
Dependability

UNITED SUPPLY
AND *Manufacturing* COMPANY
TULSA, OKLAHOMA
Stores in Kansas, Oklahoma, Texas, Louisiana, and New Mexico

RECOMMENDED READING

ON REDUCING PISTON-PACKING COSTS AND CUTTING OVER-ALL OPERATING EXPENSE!



HERE are two free bulletins which show you how to save real money, time and trouble if you have a stake in reciprocating pumps or air or hydraulic mechanisms of virtually any size or type.

These bulletins explain clearly how Darcova Pumcups work . . . and are full of engineering data and typical performance examples. There's plenty of information to enable you to judge how much you stand to gain by giving Darcova Pumcups and Darling pistons a try. Write, or use the handy coupon below.

DARCOVA®
THE ORIGINAL COMPOSITION CUP

DARLING VALVE & Manufacturing Co.
WILLIAMSPORT, PA.

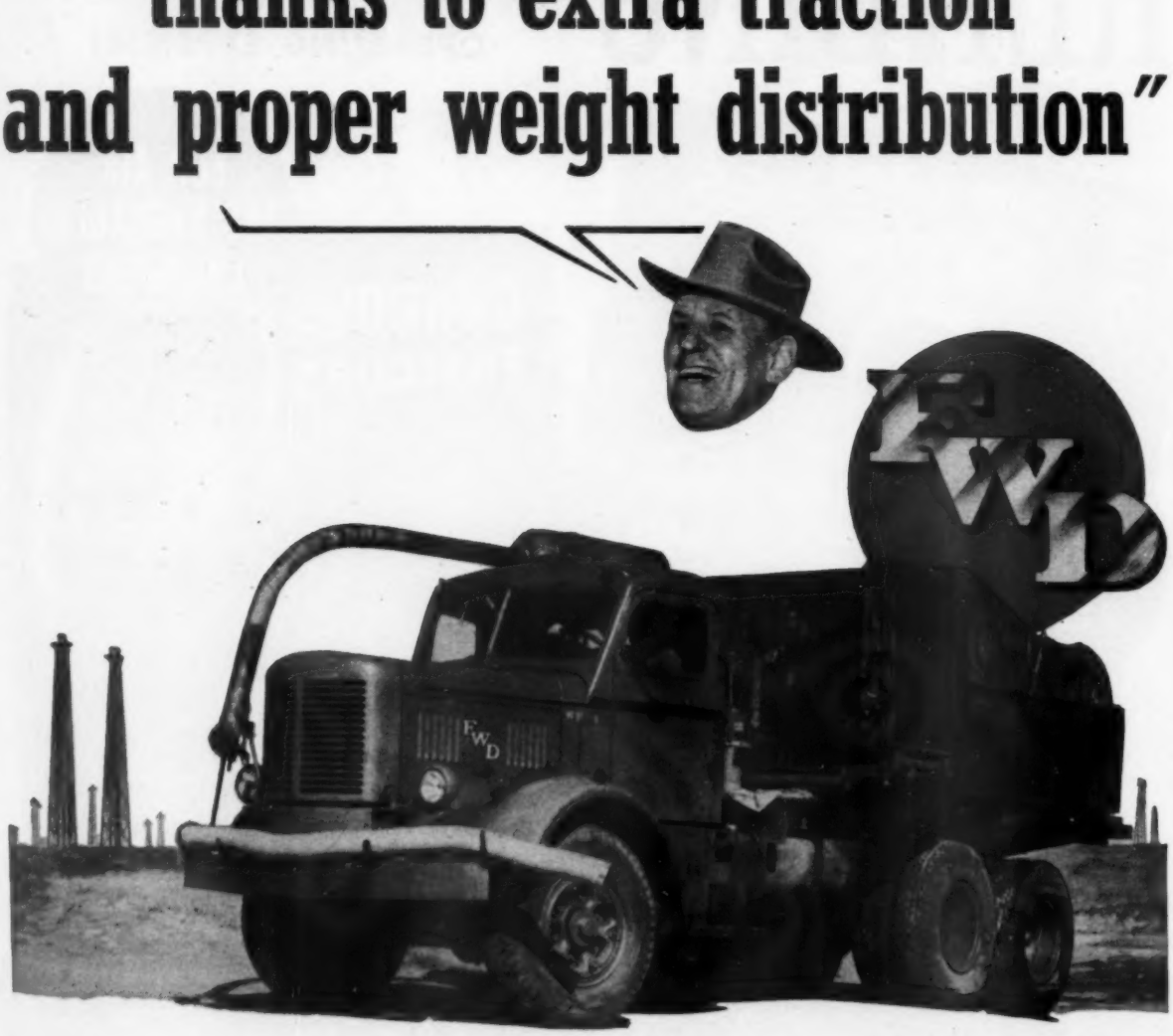
Darling Valve & Mfg. Co., Williamsport 1, Pa.
Please send me the free bulletin checked below:
☐ No. 4401 Darcova Pumcups for reciprocating pumps.
☐ No. 4502 Darcova Pumcups for air or hydraulic mechanisms.

Name_____
Company_____
Address_____
City_____ State_____

XUM

"We get to location faster... safely...

thanks to extra traction and proper weight distribution"



Sure, you want equipment to arrive at location *on schedule!* But, as a cost-conscious operator, you want schedules kept *without wasteful use of your equipment capital.* And that's exactly why FWD is first choice—wherever conventional trucks have roughest going and shortest life. The FWD principle of driving power on each wheel gives you many unmatched advantages. Extra traction rolls the FWD safely and swiftly over terrain that challenges ordinary vehicles. Balanced distribution of load and power minimizes strain and wear. Maintenance and "down-time" are slashed . . . creating more *productive time* and *productive dollars* for you!

GET FULL FACTS on the entire team of FWDs. Models now range from 14,500 to 58,000 GVW. 4- and 6-wheel-drives. Ask for the free "Oil Field Packet" of bulletins.

See your FWD distributor or write FWD.
THE FOUR WHEEL DRIVE AUTO CO.
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ont.
World-Wide Sales and Service

America's Foremost Heavy-Duty Truck

They Say—

Oil Imports and Coal

"Some people believe that the decrease in use of coal has been caused by imports of oil. Statistics, however, do not show this to be the case. They show, on the contrary, that, while coal has lost some business to oil, a very small fraction has been due to oil imports.

"For example, petroleum in the form of gasoline for automobiles and planes, fuel for jet planes, diesel fuel for buses and tractors, lubricating oil, and many other products, does not compete with coal at all. . . .

"The great development of petroleum resources in this nation has been a fundamental factor in the remarkable growth of our country and in its security. The strength and welfare of the nation will continue to depend importantly on a successful and strong domestic oil industry.

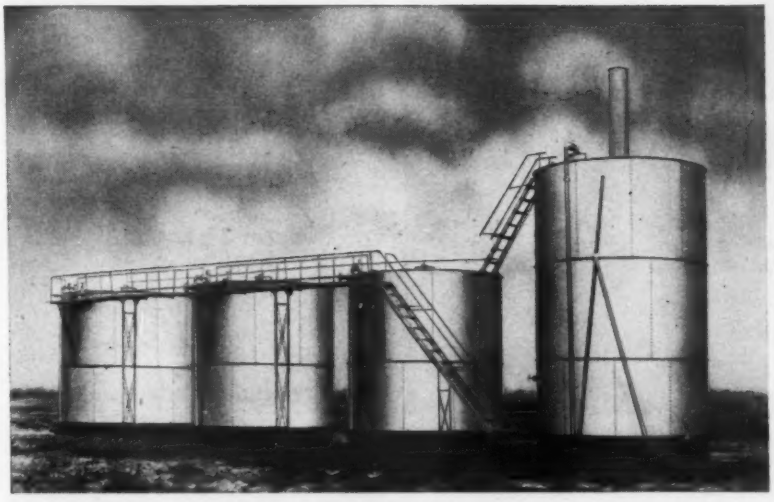
"I wish to make it perfectly clear that oil men are not seeking any economic advantage over any other industry with which we may be in competition. We are willing to succeed or fail in our economic existence on the results from our own efforts on a free competitive basis. We are vitally concerned, however, in keeping the domestic petroleum in a healthy state so that the demands of the public . . . can be adequately supplied at reasonable prices and at the same time we can be in a position, with adequate production of crude oil, refining, and transportation facilities to come again to the aid of national defense in case it should be required, as we did during the past two great wars."

B. L. Majewski, vice president, Deep Rock Oil Corp., Chicago, in a speech before the fuels forum of the National Association of Purchasing Agents, Cleveland.

Felony of Size

"The suit (federal antitrust suit against West Coast oil companies), if successful, will break up the oil industry as we have known it. It is a phase of the developing political war of extinction against the successful American institution of large business. It calls into play the same technique the antitrust division has employed against other key industries—steel, aluminum, foods, chemicals, and the rest. It is part of the comprehensive campaign to try to force acceptance of the doctrine that large enterprises can be operated legally only under government control. And the end of that road is governmental domination of every aspect of American life—the forfeit of freedom. . . .

Proved in Service
in Oil Fields the World Over...



Three 500-barrel Butler Bolted Tanks and one 750-barrel Butler Tank, used by a drilling company of Corpus Christi, Texas.

BUTLER® **Bolted Steel OIL TANKS**

- Single Tanks or Complete Batteries at Low Cost.
- Precision Formed Sheets for Fast, Low Cost Erection.
- Bolted Construction for Permanent Service or Convenient Removal to New Locations.
- Built to Do *More* than Conform to A.P.I. Specifications.
- Backed by Butler's Nearly 50 Years of Experience in Building Steel Tanks.

Call These Specialists for Prompt Service

on • Butler Bolted Tanks • Walkways • Stairways • Unit Heaters • Other Oil Field Equipment

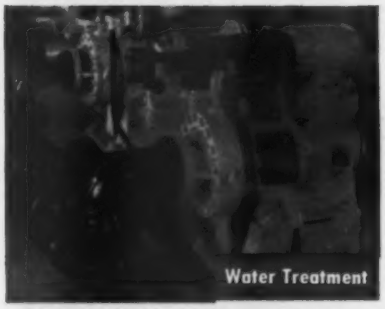
AMERICAN PIPE & SUPPLY CO.
Denver and Rangely, Col.
Casper, Wyo.
Cut Bank, Mont.

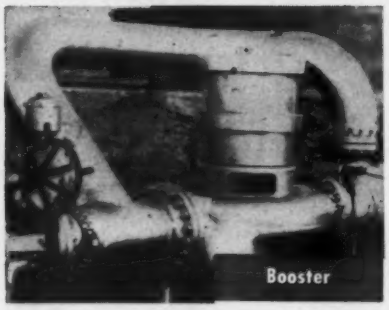
HARRY G. MILLER
El Dorado, Ark.

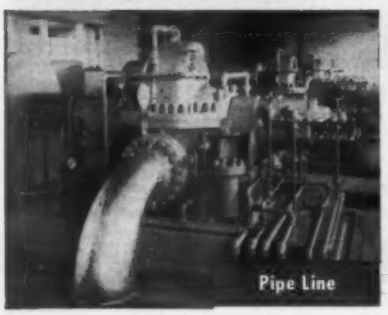
UNION TANK & SUPPLY CO.
Fort Worth, Houston, Odessa, Snyder, Alice, Tyler, Midland, Nocona, Texas.
Lafayette, Ruston and New Orleans, La.
Great Bend, Kans.
Tulsa, Oklahoma City, Okla.
Hobbs, N. M.

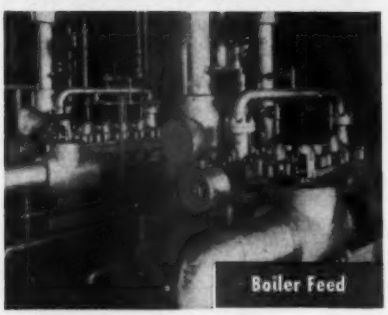
BUTLER MANUFACTURING COMPANY
KANSAS CITY, MO. GALESBURG, ILL. RICHMOND, CALIF. MINNEAPOLIS, MINN.

XUM









UNITED CENTRIFUGAL PUMPS } **Engineered to each job for *Plus Performance***

United's unique engineering and manufacturing facilities are set up to tailor each pump to meet specific job requirements. This means custom-built performance without premium cost. *Yet basic United designs provide for maximum interchangeability of parts, easy accessibility, simplified maintenance.* Thousands of installations, from refineries to pipelines, are daily proving the dependability and efficiency of United Centrifugal Pumps . . . backed by over a quarter-century of specialized service to the oil industries. Make it a point to submit *your* pumping problems to United engineers, for only an engineered-to-the-job pump can assure you top performance—year after year. Contact your nearest United sales office today.

UNITED CENTRIFUGAL PUMPS Division of United Iron Works Since 1890

Main Offices and Plants: **Oakland 7, California**

Sales Offices: LOS ANGELES • HOUSTON • DENVER • TULSA • ST. LOUIS • CHICAGO • CLEVELAND • NEW YORK

"The only threat of monopoly hanging over the western oil industry is that posed by government, and the antitrust division has set out to turn that threat into reality by undertaking to make a sin of efficiency, a crime of success, a felony of size—and a corpse of private enterprise."

S. T. Petersen, president, and R. G. Follis, chairman, of Standard Oil Co. of California, in a letter to stockholders, employes, and customers.

Pipe Exports

"Despite comparatively small shipments of iron and steel to foreign countries last year, total steel-pipe exports were 834,183 tons, a record. That total exceeded the 1948 tonnage by 38 per cent and was 22 per cent greater than in 1947, the previous top year for pipe exports. Shipments of all kinds of steel pipe to foreign countries accounted for 12 per cent of the total shipped from pipe mills last year.

"Tonnage records were set in exports of both seamless and welded casing and oil-line pipe. The sharpest increase was in the record exports of welded galvanized pipe. Export shipments of the latter gained 136 per cent over 1948."

American Iron and Steel Institute.

Gas Reserves

"We do not know that we have enough natural gas for such widespread use. There has never been an authoritative, disinterested determination of the quantity that is actually available from pools already discovered. All estimates so far made have come only from interested industry sources and the discrepancies in these estimates, as officially recorded, are startling and ominous.

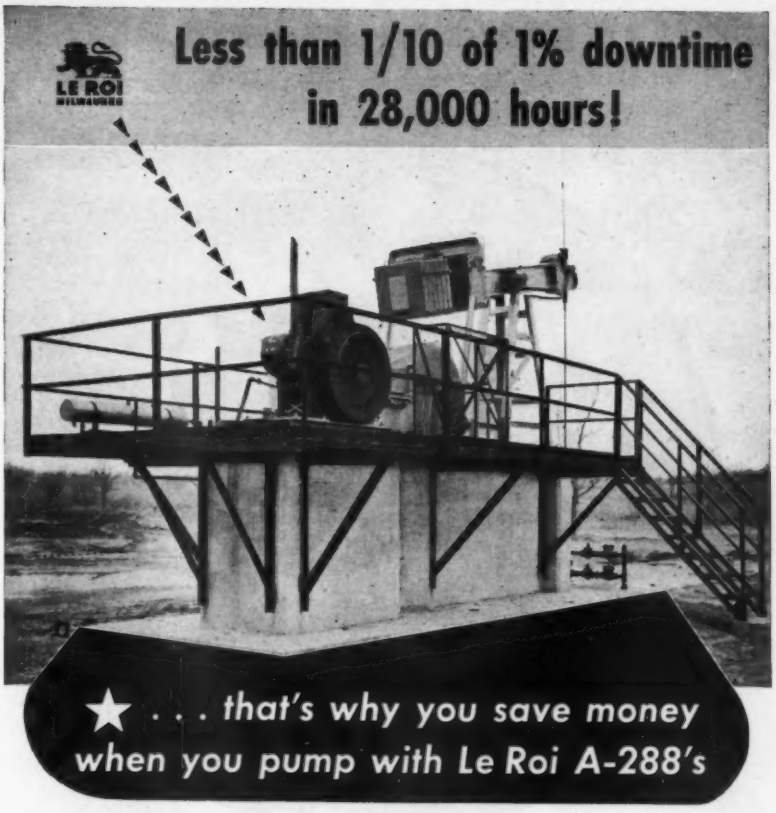
"We should also calculate the amount of natural gas which will be required yearly for the efficient operation of the extensive network of long-distance pipe lines already constructed or authorized.

"Nor do we know how much natural gas remains undiscovered. Obviously estimates of the total content of new wells struck in the course of test drilling are subject to all the uncertainties and exaggerated hopes and ofttimes desperate need of wildcatters and promoters of vary degrees of responsibility. Yet it is on such irresponsible data, so-called, that additions to proven reserves of natural gas are soberly reported, year by year, by committees of the American Gas Association."

Roderick Stephens, addressing the annual convention of the Pennsylvania Retail Coal Merchants Association.

Government Rubber

"We believe a point has been reached where government operation is actually holding up progress in



FOR more than 3 years of continuous-duty service, this Le Roi A-288 required little more than routine inspection every other week. Oil is changed every 2000 hours. And because of the patented, closed "vaporizing-condensing" cooling system, make-up water is negligible. Furthermore, inspection requires only a few minutes time because of visible oil and water gauges — *shut down is unnecessary.*

Such performance is typical. So get after your pumping costs with Le Roi A-288's. Horsepowers range from 13 to 26, and speeds from 360 to 720 rpm. Have your Le Roi distributor show you how you can save money. Write for detailed information.

LE ROI COMPANY, Milwaukee 14, Wisconsin

New York • Washington • Birmingham • Tulsa • San Carlos

P-102

See your LE ROI MILWAUKEE *Distributor*

Oklahoma
Le Roi Company Branch — Tulsa
Carson Machine & Supply Co. — Oklahoma City

East & South Texas, Gulf Coast
Southern Engine and Pump Company — Houston, Kilgore, Edinburg, Dallas, San Antonio, Corpus Christi, Texas, and Lafayette, Houma, Louisiana.

North & West Texas, New Mexico
General Machine & Supply Co.—Odessa, Snyder, Texas.
Nortex Engine & Equipment Co.—Wichita Falls, Texas.

Kansas
Carson Machine and Supply Co.—Great Bend

Illinois — Western Kentucky
Western Machinery & Engine Company—Centralia, Illinois and St. Louis, Missouri.

Michigan
Hafer Engine Service — Reed City

Rocky Mountain Area
Gehring Equipment Co. — Casper, Wyoming, Rangeley, Colorado.

Northern Louisiana & Mississippi
Ingersoll Corporation — Shreveport, Louisiana, and Jackson, Mississippi.

West Coast
Le Roi-Rix Machinery Co. — Los Angeles, Long Beach and Bakersfield, Calif.

Appalachian Area
P. C. McKenzie Co., Pittsburgh

Canada
Lucey Export Ltd. — Calgary, Edmonton, Alberta.

Complete Sales and Service Facilities

XUM

PROVED PERFORMANCE

THE WORLD OVER

◆ Faster Penetration

◆ Improved Core Recovery

◆ Less Cost Per Foot

Base Points:
Salt Lake City, Utah
Casper, Wyo., Worland, Wyo.
Hobbs, N. M., Shreveport, La.
Purcell, Oklahoma

LESS COST PER FOOT
CHRISTENSEN
DIAMOND PRODUCTS

CHRISTENSEN
DIAMOND PRODUCTS CO.

1975 SOUTH SECOND WEST • SALT LAKE CITY, UTAH • TELEPHONE 6-8738

California Representative:
Mercury Oil Tool Co.
Los Angeles - Bakersfield

Export Representative:
R. J. Eiche & Associates, Inc.
Los Angeles - New York City

Canadian Representative:
James Emrick Company, Ltd.
Edmonton, Alberta

butyl development. With butyl superiority over natural rubber for the manufacture of inner tubes clearly recognized, apparently no need is seen by the Government for carrying out any research. My company has already spent $11,000,000 in developing butyl to its present stage, and we cannot justify continuing our research work to develop additional uses and wider markets when there is no prospect of any return for the very substantial expenditures which are required to carry out such research.

"No effort is being made to develop additional uses and the wider markets that would give assurance of stable production. Not one single salesman is calling upon prospective users at home or abroad. There is no advertising; no promotion. With the plants in government hands, we cannot maintain an aggressive sales organization, backed by technical and market research and engineering assistance, to expend present uses and promote new ones.

"The sooner the butyl plants are turned over to private industry, the sooner such a sales program can be started and the sooner butyl can make its greatest contribution to the solution of this national problem. The larger the market butyl reaches, the more natural rubber will be available for stockpiling now and the less our dependence upon it in time of emergency."

O. V. Tracy, manager of the chemical products department, Esso Standard Oil Co., before the Senate armed forces committee.

Rubber Without Government

"There has developed a very unhappy price situation. A year ago, synthetic (rubber) was selling for about 18½ cents a pound and natural for 16¼ cents. Today, synthetic is still selling at the same level, but natural, in recent months, has skyrocketed to about 31 cents. Heavy demand here and apparently in some other parts of the world has combined with inadequate shipments from the Far East to bring this price climb.

"We think the sooner this industry gets into private hands, the better it will be. Under government control, production is only now about to be stepped up. At least one tire maker has said far more synthetic would be used, under the present price relationship.

"Actually, the tire makers since the war have been using more synthetic than they were required to by government regulation. We suspect that further improvements in quality of synthetic would come faster if private companies were in the business. We have a hunch, too, that the price of synthetic can be reduced by the ingenuity of private competitive production."

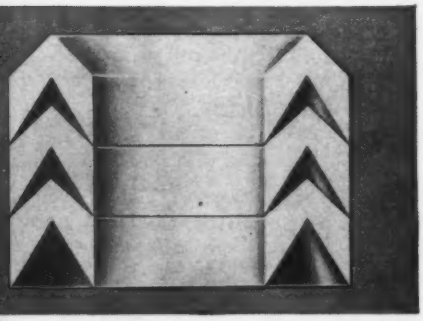
Editorial in the Wall Street Journal.

IT'S *New* AND A *Natural*

FISHER® *Teflon*

V-RING PACKING

Fisher Teflon V-ring Packing has been adopted as standard available construction for all Fisher diaphragm motor valves. Teflon is tough, resilient, and chemically inert. Its smooth soap-like surface makes it ideal packing for control valves. After more than two years of laboratory and field testing Teflon in various forms and shapes, Fisher engineers decided upon the V-ring construction as ideal for packing.



Fisher Teflon packing cut in section to show V-ring construction.

Advantages of Fisher Teflon V-ring packing:

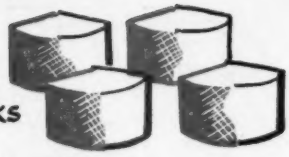
- ***Economical***
- ***Minimum leakage***
- ***Low maintenance***
- ***Reduction of packing friction***
- ***No corrosion***
- ***No product contamination***

FISHER GOVERNOR CO.

MARSHALLTOWN, IOWA

XUM

Easy Lesson in CONSERVATION ECONOMICS

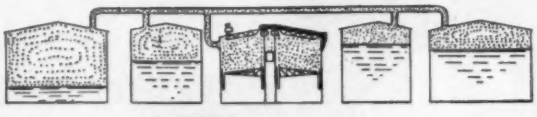
If you have several cone roof tanks 

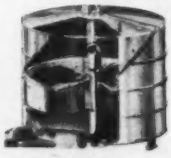
that can be interconnected,

you can convert breathing losses and filling losses

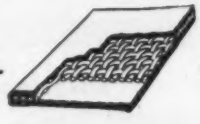
into profits quickly. Field studies at a typical gasoline plant

show $aving$ of more than 5,000 gallons a week when six cone roof

tanks were hooked up  with a

Wiggins DRY SEAL Gasholder.  Including expenses,

amortization took less than 20 months. What's more,

the Wiggins 100% DRY SEAL  cuts out rain

and snow maintenance problems.

GENERAL AMERICAN
TRANSPORTATION CORPORATION
135 South LaSalle Street, Chicago 90, Illinois

District Offices: Buffalo • Cleveland • Dallas • Houston
Los Angeles • New Orleans • New York • Pittsburgh
St. Louis • San Francisco • Seattle • Tulsa • Washington

Export Dept., 10 East 49th Street, New York 17, New York

Send for Full Data on the Wiggins Dry Seal Gasholder. Also—without obligation—ask for a "Pay Out Analysis" of your storage set-up.

Published every Thursday by The Petroleum Publishing Co., 211 S. Cheyenne, Tulsa, Okla. Founded in 1902. Name changed to The Oil and Gas Journal in 1910 by Patrick C. Boyle.

P. C. LAUINGER
President

S. H. ROURKE
Business Manager

HANSON B. PIGMAN
Circulation Manager

ADVERTISING
MITCHELL TUCKER
Manager

Houston Office
Sterling Building, Phone Charter 4626
WAYNE RIVES
Vice President, Gulf Coast Sales
JOHN M. SPEARS
Representative

New York Office
415 Lexington Ave., Phone Murray Hill 2-4852
CHARLES A. WARDLEY
Eastern Manager
ROBERT N. CAIRD, JR.
Representative

Chicago Office
105 West Madison, Phone Central 6-2537
C. R. FARMER
Manager
E. S. KLAPPENBACH
Representative

Pittsburgh Office
429 Fourth Ave., Phone Atlantic 1-4835
ALFRED M. JONES
Manager

Tulsa Office
211 S. Cheyenne, Phone 3-6291
JOHN D. REILLY
Mid-Continent Manager
J. PARKER HOLLAND
Production Manager

Los Angeles Office
650 S. Grand Ave., Phone Vandike 0722
DONALD O. HANSON
Manager

England Office
111 Thorley Lane, Timperley, Cheshire
HARRY BECKER
European Representative

Member
Audit Bureau of Circulations
Associated Business Papers

JOURNALLY Speaking

D.D.T.

TO the oil gals in New Orleans the initials "D.D.T." don't mean "drop dead twice" nor do they have anything to do with killing bugs. They stand for the Desk & Derrick Times, as lively a publication as you can find in the oil industry.

This is the monthly organ of the original—but no longer the only—Desk and Derrick Club, which has just reached the mature age of 1 year. And we mean mature. It's really a going concern.

Maybe the oil-company executives smiled when their secretaries talked about organizing a ladies' oil club, but they take it seriously now. Oh, sure, the girls have a good time, but the social side is definitely a minor part of the program.

The New Orleans Desk and Derrick Club has a state charter as a nonprofit institution. It supports itself entirely by membership dues, and neither asks nor accepts any subsidy from an oil company or other source. Its membership lists 335 women employed by 44 oil companies and service concerns in New Orleans. They meet at least twice a month, and an average of 150 attend every meeting.

The main purposes of the club are to learn more about the oil industry, to understand the technical terms the bosses use in dictation, and to meet the girls in other firms with whom they have to talk on the phone.

To achieve these purposes the club has gone on field trips to oil fields, refineries, offshore drilling rigs, seismic operations, and other oil activities. There are courses of instruction by company experts on various phases of the oil business, lectures by the top brass among the oil executives of the area, and showings of oil movies. There also are picnics, sport events, and social hours, but the girls have exhibited an avidity for knowledge which has flabbergasted some of their bosses.

So successful is the New Orleans club that it is now the "mother chapter" to Desk and Derrick Clubs in Jackson, Miss., and Los Angeles. Inquiries on how to start a chapter have come from Lake Charles and Lafayette, La.; Houston; Denver; Tulsa, and Atlanta.

All the doings of the New Orleans club are spritely recorded in the monthly Desk & Derrick Times, which the girls mimeograph and mail at their own expense. No male has anything to do with the club except when asked to give a lecture or conduct a tour.

But one thing bothers the girls now. Attendance is so large that meetings no longer can be held in the quarters loaned by the (all male) Petroleum Club of New Orleans. So the girls are toying with the idea of setting up quarters of their own. This is an obstacle so formidable as to discourage many a projected oilmen's club in other cities, but these New Orleans oil gals have a lot more to them than just Southern charm. Never underestimate the power of a woman.

Please Waiting

THIS country is not the only one suffering from a deterioration of the postal service, as we have it first-hand that the mails in China are "misordered." A refiner in the besieged island of Formosa writes:

"I have received The Oil and Gas Journal orderly before. But now it has been misordered by the mail. I have not received the Journals of November. After my companion having received these, so I write to you. Please take care of the matter! If these issues had being in the mail or have crossed in the mail, please just forget the matter. If it had been returned back, please mail it or supply to me again. And will you?

"My subscription will expire, and I am going to search the way that I may pay the check to you. As you know the U. S. dollar is not currently in China, I must get it in black market or by other way. Please waiting for me!"

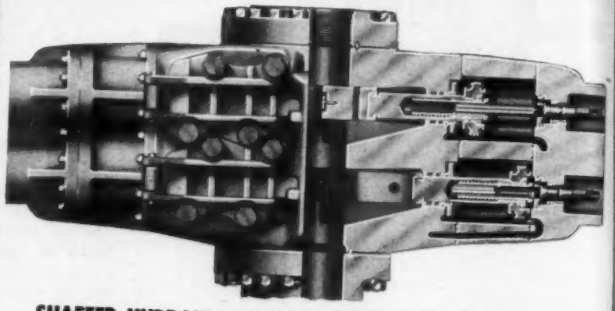
—*Henry D. Ralph.*

XUM

THE SHAFFER LINE OF PRESSURE CONTROL EQUIPMENT IS THE MOST COMPLETE IN THE INDUSTRY!

Shaffer gives you a choice of either *Hydraulic* or *Mechanical* Cellar Control Gates—plus a full range of other pressure control equipment!

Regardless of your pressure control requirements, there's a Shaffer product to fill them . . . *Hydraulic* Cellar Control Gates . . . *Mechanical* Cellar Control Gates (both *Single* and *Double*) . . . Combination Rotating Blowout Preventers and Strippers . . . a complete line of advanced Casing and Landing Heads . . . various types of Tubing Heads, Flow Beans and other equipment for *every* pressure control requirement. The unusually diversified line of Shaffer field-tested equipment includes . . .



SHAFFER HYDRAULIC CELLAR CONTROL GATES—the most advanced, most compact, most efficient hydraulically-operated gates on the market.

- Two separate ram compartments unitized into *one* compact body for maximum protection and space saving.
- Even in sizes as large as 13⅝" you get *two* ram compartments in an overall height of only 30"—*smaller sizes even less!*
- Completely enclosed—no outside moving parts to become damaged or corroded by chemical muds dripping into cellar.
- New simplicity in changing rams—simply unbolt and open two doors, change rams, then close and bolt the doors. A new high in simplicity, speed, convenience!

The above are only a few of the *many* far-reaching advancements designed into the new Shaffer Hydraulic Cellar Control Gate. Available in a full range of sizes and pressure ratings. Write for full details!

Shaffer Double Cellar Control Gates—the famous *mechanically* operated cellar control gates used by leading operators throughout the world.

- Can be operated by *any* type of power—air, electric or steam drive—*plus added protection of full manual standby!*
- Two ram compartments in *one* body assures maximum space-saving compactness . . . less than 29" overall height in sizes as large as 13⅝"—smaller sizes even less.
- Rams are quickly changed by simply removing one end cover—an easy, simple operation.

Shaffer Double Cellar Control Gates also provide many other unique features and are available in a full range of sizes and pressure ratings to meet any requirement.

For applications where maximum conservation of vertical space is not essential, Shaffer also features a complete line of mechanically operated *single* Cellar Control Gates.

Shaffer Combination Rotating Blowout Preventer and Stripper—combines in *one* unit every necessary feature for complete and fool-proof pressure control while drilling under pressure . .

- Maintains continuous seal around all elements in the drill string—square, hexagonal, octagonal or round—rotating or not.
- Automatically expands and contracts to fit varying diameters in the string such as tool joints, couplings and drill collars.
- Not only maintains its seal while the drill string is rotating, but also while stripping pipe in or out of the well.
- Quick-Releasing Bonnet permits passing abnormally large tools such as bits and reamers through the unit quickly and conveniently.

There is nothing as *complete*, as *advanced*, as *simple* as this Shaffer unit for maintaining complete pressure control while the drill string is rotating or being stripped in or out of the well!

Shaffer Landing, Casing and Tubing Heads—used in all major oil producing countries throughout the world for modern compact casing or tubing suspensions.

- Available in many types and various packing arrangements, including types where no internal threads are used for holding packing element in place.
- For maximum compactness, Base Heads and Combination Base, Casing and Tubing Heads are available that combine several units in one.

From Shaffer you can also obtain a full line of advanced Tubing Heads, Multiple Zone Hook-Ups and other equipment to complete your pressure control installation.

Shaffer Adjustable Flow Beans—provide means for controlling the flow of fluid under pressure. Shaffer pioneered Adjustable Flow Beans and offers a wide range of different types for drilling, production and refinery operations—all embodying unique advancements found nowhere else. Shaffer Adjustable Flow Beans are available with Conical, Micro and electrically-heated Thermo Tips in both regular and hard metal designs. All popular sizes—both flanged and screwed connections to meet any installation requirement.

Write for the new Shaffer Catalog that describes Shaffer products in greater detail!

See pages 4433 to 4496 of the 1950 Composite Catalog.

27 YEARS OF OIL TOOL LEADERSHIP

SHAFFER

HIGH PRESSURE DRILLING AND CONTROL EQUIPMENT • FISHING TOOLS THAT

SHAFFER TOOL WORKS, Brea, California • California Service Shops: Santa Fe Springs
HOUSTON, TEXAS, 6006 Navigation Blvd. • ODESSA, TEXAS, 1925 West Second
OKLAHOMA CITY, OKLAHOMA, Acme Oil Tool Company, 1001 S. E. 29th Street
CASPER, WYOMING, Shaffer Tool Works, Post Office Box 1788
EXPORT SALES OFFICE: Shaffer Tool Works, 500 Fifth Avenue, New York, N. Y.

the OIL AND GAS JOURNAL

VOL. 49, NO. 8 JUNE 29, 1950

EDITORIAL STAFF

C. O. WILLSON
Editor

Kenneth B. Barnes ..... Engineering Editor
Henry D. Ralph ..... News Editor
George H. Weber ..... Refining Editor
415 Lexington Avenue, New York City
Paul Reed ..... Pipe Line Editor
W. L. Nelson ..... Technical Editor
Lynn M. Nichols ..... Associate Editor
Neil Williams ..... Associate Editor
R. B. Tuttle ..... Associate Editor
Philip C. Ingalls ..... Associate Editor
C. Dudley Johnston ..... Art Director

DISTRICT EDITORS

Dahl M. Duff ..... 415 Lexington, New York City
Ted A. Armstrong ..... 211 S. Cheyenne, Tulsa
John C. Casper ..... 211 S. Cheyenne, Tulsa
D. H. Stormont ..... 650 S. Grand, Los Angeles
Carl F. Hoot ..... Mercantile Bank Bldg., Dallas
Victor Lauriston ..... 35 Stanley Ave., Chatham, Ont.
Bertram F. Linz ..... 621 Albee Bldg., Washington
Leigh S. McCaslin, Jr. ..... Sterling Bldg., Houston
John C. Reidel ..... 211 S. Cheyenne, Tulsa
William P. Sterne ..... 211 S. Cheyenne, Tulsa
Roy F. Carlson ..... Mercantile Bank Bldg., Dallas
Polly DeArmond ..... Editorial Assistant, Tulsa
Lucy Dee Owen ..... Editorial Assistant, Houston

CORRESPONDENTS AT

Denver, Colo. — Calgary, Alta.
Pittsburgh, Pa. — Ashland, Ky.
Columbus, Ohio — Oil City, Pa.
Mount Pleasant, Mich.

Subscription rate to the petroleum industry, United States and foreign, 1 year, $3.00. Single copies, 50 cents. Back copies when over a year old, one dollar. Note: Payments from outside the U.S.A. may be in the form of an international money order or check on a U.S.A. bank. Entered as second-class mail matter at Tulsa, Okla., under Act of March 3, 1879. Copyright 1950 by The Petroleum Publishing Co.

In This Issue

News

Unprecedented Exploratory Drilling Campaign Noted This Year 37
Work Ready to Start on Texas Illinois Natural-Gas Line 39
Texas-to-Michigan Natural-Gas Line Is Planned 41
P.E.S.A. Elects Officers 41
Kentucky Oil and Gas Association Names Diederich President 42
Midwest Refiners Hard Pressed to Keep Up With Octane Demands 43
Mexican Oil Treaty Is Abrogated 44
Percentage of Production Asked for Homestead Lands 45
Rumors Persist Mexican Oil Loan Is In the Making 45
Committee Named to Keep Watch on FTC Activities 46
Contest Heightens Over Who Will Pipe Alberta Gas to Pacific Coast 47
American Methods Increasing Crude Production, Reserves in Japan 50
Products Pipe Line Serves African Nuts Project 53

Engineering-Operating

Humble's New 370-Mile 17-In. Oil Pipe Line 58
Water Flood in Neosho County, Kansas 60
Portable Supply Store for Drilling Rigs 63
Canopy Frame for Drilling Rigs 64
Centrifugal Compressors on Texas Eastern System 66
Simple Safety Measure Reduces Fire Hazard at Loading Docks 68
Safety, Convenience Built Into California Booster Station 69
Redesigning Shell's Heysham Refinery 71
New Remote-Control Rig 74
Book Reviews 78
Panhandle's "Kitten Cracker" Has 1,250-Bbl. Daily Charge 81
Jet Process of Open-Hole Shooting 85
Operating Ideas 87
Questions on Technology 88
Engineering Fundamentals—Core Data 91
Refiner's Notebook—Controller Characteristics 93

Exploration-Development

South-Central Nebraska Gets Oil 113
Highlights of Week's Developments 113
Reports by Areas Start on Page 114
Summary of May Completions 131

Departments

They Say 25
Journally Speaking 31
Editorial 35
This Week 36
Watching Washington 46
International News 50
Personals 55
Deaths in the Industry 57
Pipe-Line News 95
Pipe-Line Construction 99
Drilling Contractors 105
Refining News 108
Natural-Gas News 111
Exploration Statistics 132
Production Statistics 133
Refining Statistics 134
Market Statistics 135
Equipment Men in News 136
Classified Advertising 138
Calendar of Events 142
Advertisers' Index 142

XUM

Save Time! Get Better Results!

Run the Baker WIRE LINE Bridge Plug* and profit from these exclusive advantages...

1. You'll be using the better, more efficient, time-tested Baker Model "K" WIRE LINE Bridge Plug (Product No. 400-D)—proved by thousands of successful jobs when previously run on drill pipe or tubing.
2. You can choose the type of Baker Bridge Plug exactly suited to your particular job: the Cast Iron type for permanent installations; the Magnesium Alloy type for temporary installations.
3. Regardless of the size or type of Baker Bridge Plug used, you *know* that it will drill out quickly and easily, because *all* Baker Bridge Plugs are designed with "drillability" in mind. The very minimum cross-section of material need be drilled up, and even the slips are designed to break up readily.
4. You won't need to place cement above the Baker Bridge Plug to obtain a 100%, leak-proof pack-off; but you'll be able to place the cement there if you desire simply by using the special Baker Model "B" Dump Bailer, which is run on the wire line at the same time as the Bridge Plug.
5. You can select your favorite wire line service company to do the job—see list below.

**Baker Model "K" Wire Line Bridge Plug... a product of...*

**Now you can also run and set the Baker Model "D" Retainer Production Packer (Product No. 415-D) on a wire line. Ask your service company for details, or send today for a free copy of the new 84-page Baker Packer brochure.*

BAKER
OIL TOOLS, INC.
Houston - Los Angeles - New York

For Wire Line Service Call . . . BYRON JACKSON—Service Division • DOWELL, INCORPORATED • INTERNATIONAL CEMENTERS, INC. • LANE-WELLS COMPANY • McCULLOUGH TOOL CO. • PERFORATING GUNS ATLAS CORP. • SCHLUMBERGER WELL SURVEYING CORP. SPARTAN TOOL AND SERVICE CO. • WELEX JET SERVICES, INC. • THE WESTERN COMPANY

XUM

ELL,
GH
RP.
NY

XUM

XUM

Octane Race

The upward trend in motor-fuel octane ratings under way consistently over the past quarter century was never more apparent and significant than it has been in recent months.

The latest increases have been so large that some observers contend that the "race" has gotten out of hand, resulting in refining and distributing practices which are costly and unjustified by customer requirements.

The pro and con of the need for the steady climb in the antiknock properties of gasoline have bobbed up frequently ever since the introduction of tetraethyl lead as a blending agent and the expansion in cracking facilities began to be reflected in higher octane ratings. As in the present instance it has frequently been possible to point out that the antiknock qualities of fuels were in excess of the requirements of most cars and trucks.

The lead over the past 3 years has been taken by those companies which installed processing equipment for the refining of aviation motor fuels during the war. Specially designed war units which, it was thought, would never be used in peacetime have been placed on stream over the past 2 years.

Comparable equipment centering in catalytic cracking, reforming, and improved treating methods have been installed at additional plants.

From the automotive end a few manufacturers, to obtain additional improvements in performance, have stepped up the compression ratios of their engines to take full advantage of the highest octane ratings available. Consumer reactions to car performance have been favorable.

The oil business, as one of the direct beneficiaries, cannot logically criticize this well-established policy of the manufacturers of constantly improving their product, centering in engine performance. They have done such an outstanding job that they have created demands which this year probably will total 8 million units in this country and Canada.

The significance of this automotive growth extends further than the petroleum industry and has in effect become the dominant factor in our entire economy. Certainly the oil industry wants to give every encouragement to those developments in engine design which strengthen the position of the closely allied industry which supplies the bulk of its markets.

But it should also be equally apparent that in manufacturing the higher-octane motor fuels refiners are entitled to prices which reflect the higher costs. Stepping up octane ratings several points since 1945 has meant tremendous capital outlays, and this fact plus higher operating costs and greater plant losses obviously means higher costs for the finished motor fuel.

The car owner who demands the maximum in car performance will not object to a few additional dollars yearly for the higher-octane fuels. Price ultimately will become the determining factor in just how far it is feasible to go in upping the octane ratings. Thus the entire question becomes an economic one with final control resting with the consumer who pays the bill.

XUM

THIS WEEK

EXPLORATION—Number of wildcats now drilling is an all-time record. . . . Most areas report extensive exploration activity. . . . Search for new oil is primarily close to producing fields, seeking extensions and new pays. . . . Success of this campaign is shown in the declining ratio of dry holes. . . . Expected to result in substantial additions to reserves. . . .

IMPORTS—Abrogation of Mexican agreement means that after January 1 tariff will double on imports of crude over 5 per cent of refinery runs. . . . May curtail imports from Caribbean and Middle East. . . . ¶No further action from administration expected this year, but independents still pressing for more curtailment. . . . ¶House committee supports claim that imports injure domestic oil industry. . . .

WASHINGTON—Mexico believed making new attempt to secure big oil loan from U. S. Government. . . . Makes early repayment of 1944 loan for refinery construction. . . . ¶Interior Department opposes bill to give surface owners a share of the Government's royalty for damages caused by exploration and drilling. . . . ¶Congressional and industry leaders dissatisfied with the dubious legality of basing-point pricing resulting from veto of clarifying legislation. . . . ¶Rules committee paves way for House vote on tidelands bill. . . . No chance seen for end of controversy this year. . . .

ACTIVITY—Crude production for week ended June 24 averaged 5,291,000 bbl. daily, up 11,850 bbl. daily from previous week and 409,250 bbl. daily from same week last year. . . . ¶Completions for the week dropped 51 wells to 800, still 17 wells greater than same week in 1949. . . . Wildcat completions were up 5 wells to 153. . . . ¶Rotary rigs operating in United States set another record for the year with 2,199 rigs operating on June 19. . . .

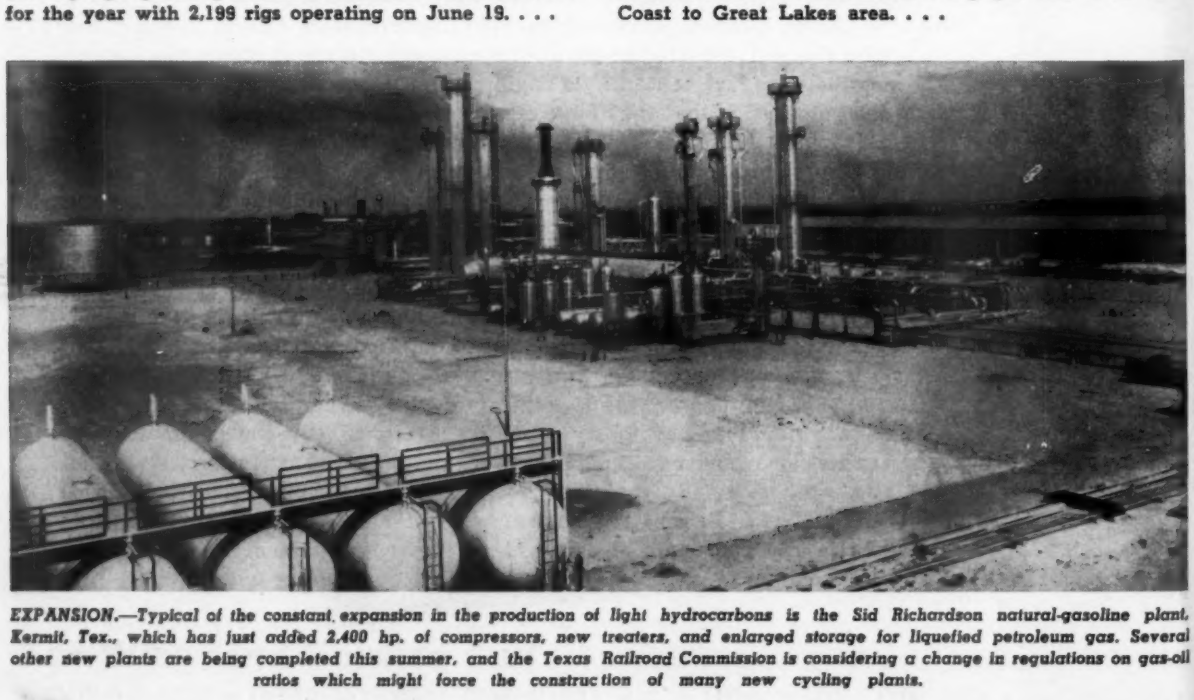
TRENDS—Indicated demand for refinery gasoline exceeded 3,000,000 bbl. daily for the first time during week ended June 17. . . . Demand for the week was 3,130,000 bbl. daily following an average of better than 2,950,000 bbl. daily for two preceding weeks. . . . More than 400,000 bbl. daily came from storage. . . . ¶Total gasoline stocks are slightly under last year. . . . Gasoline markets are very strong. . . .

INTERNATIONAL—Japan's renascent oil industry has bright outlook. . . . Modern methods increasing production. . . . Coastal refineries reopening. . . . ¶Products pipe line completed to serve East African peanuts project. . . . ¶Chile plans new agency to operate its oil industry. . . . ¶Transjordan may build a refinery. . . . ¶Venezuelan crude output at new high. . . .

REFINING—Octane race felt severely in Midwest. . . . Refiners hard pressed to meet motorists' demands for high-test fuel. . . . Expedients, new processing units being considered. . . . ¶Derby Oil Co. planning $2,000,000 improvement and enlargement program at its Wichita refinery. . . .

PIPE LINES—Texas Illinois company prepares to start construction of $117,000,000, 1,330-mile gas line from Gulf Coast to Chicago area. . . . ¶Trunkline Gas Supply Co. lets contracts for 1,238 miles for its newly authorized line from southern Texas to Illinois. . . . ¶Montana-Dakota Utilities Co. plans radio communication system on new Montana and Wyoming gas line. . . .

NATURAL GAS—Lines are drawn for big battle over right and route to export Alberta gas to Pacific Northwest. . . . No decision expected before fall. . . . ¶New concern seeks to build another big gas line from Gulf Coast to Great Lakes area. . . .



EXPANSION.—Typical of the constant expansion in the production of light hydrocarbons is the Sid Richardson natural-gasoline plant, Kermit, Tex., which has just added 2,400 hp. of compressors, new treaters, and enlarged storage for liquefied petroleum gas. Several other new plants are being completed this summer, and the Texas Railroad Commission is considering a change in regulations on gas-oil ratios which might force the construction of many new cycling plants.

Exploration Record

Current tempo of exploratory drilling indicates 1950 will chalk up another record in number of wildcat completions

Pollyanna DeArmond

PROSPECTS of a record demand for crude and products have resulted in an unprecedented exploratory drilling campaign so far this year, and there is every indication that last year's peak in wildcat completions may be bested if using May activities as a rough index holds true for 1950 as it has for the past few years.

Every postwar year has seen a new all-time high in the number of tests drilled, and in each case May has set the monthly record up to that time. It is significant, therefore, that the 663 exploratory wells drilled this May is the greatest number of such wells completed for any month this year.

The ratio of successes seems to be climbing somewhat. During May 1948, 15.7 per cent of the tests drilled discovered oil or gas; in 1949, 16.2 per cent were producers; in 1950, 18.5 per cent were commercial wells.

One noticeable trend is that, in most areas, there are relatively few rank wildcats in wholly untested territory. What makes the current exploration play the greatest in the nation's history is the large number of wells in and around proven areas, seeking extensions to known pools and production from previously nonproductive or untested formations, and which are not classed as development or field wells.

There has been a tendency toward sacrificing drilling of deep tests in order to complete more searches for oil and gas, as shown by the following comparisons of May with the same month in the past 2 years:

Completions were up 22.4 per cent over 1948 while the footage increase was up 12.5 per cent; as compared with 1949, wildcats drilled gained 3.5 per cent but footage was down (some 0.2 per cent). Average footage for the month was 3,990 ft. in 1948, jumped to 4,199 ft. in 1949, and dropped back to 3,848 ft. this year.

Areas vary.—This record-breaking wildcat activity is on a nation-wide basis, and does not apply to each separate section of the country. Some areas show lags in exploration operations but have come up with major discoveries, while others have drilled many more tests than before but had no important strikes.

Different methods of seeking new production are highlighted in different states, either rank wildcatting, extensions to or new pays in older fields, or both. Deeper drilling in some states may be offset by more numerous and shallower completions in others. Considering all these factors, to obtain an over-all picture, correspondents in each field office of The Oil and Gas Journal were asked to survey operations in their areas as the basis of this article.

> Current reports reveal that the search for new oil in this country is being conducted on the broadest and most intensive basis in the history of the oil business. It is apparent that this exploration trend will continue over the remainder of the year. This article discusses the broad implications of this exploration trend along with reports from The Oil and Gas Journal field representatives as to its significance in their areas.

Eastern.—Both shallow and deep exploratory drilling in New York and Pennsylvania counters the national trend, running even less than the lower 1948 rate, but wildcat activity may pick up around Leidy Township in Clinton County, Pennsylvania, as an Oriskany gas discovery has enhanced prospects nearer the geological region of the Allegheny front, where both new wells and considerable leasing are under way. West Virginia shows a decided increase in wildcatting. Especially active is the Limestone Hill area, with other operations at various stages in Preston, Hancock, and Wayne counties.

Wildcat completions in Ohio have been at a low level but a number of new wells are planned, most of them to test the thick sedimentary deposits dipping into the Appalachian syncline in the virgin northeast part of the state.

In Michigan, total exploratory work has declined but the percentage of successes is up. However, nothing really important has been found since 1948 when Carter Oil Co. opened Pentwater field in Oceana County. Several divergent factors have contributed to the slowing up of wildcatting in Michigan, but there are hopes that it will at least reach last year's level.

Illinois Basin.—Despite extensive development which has taken place in the Illinois Basin region, embracing southern Illinois, Indiana, and western Kentucky, over a period of years, additional new fields, extensions to existing pools, and additional producing horizons are being found steadily. This is inspiring continued exploration, particularly for isolated producing spots passed up in earlier plays. Most of the new discoveries are pools of few wells; however, an occasional large and important productive area comes to light.

Wildcatting in eastern Kentucky is at a low ebb, especially as regards tests deeper than the present lowest pay zone (Silurian). The reason for the current lack of exploratory holes

EXPLORATORY COMPLETIONS, MAY 1950

	Total comp.	Oil	Gas	Dry	Total footage	Total May 1949	Total May 1948
New York	0	0	0	0	0	0	0
Pennsylvania	2	0	0	2	16,788	0	4
West Virginia	5	0	3	2	26,324	0	7
Ohio	1	0	0	1	1,990	4	4
Indiana	63	5	0	58	110,973	41	31
Kenfucky	17	1	0	16	38,240	11	7
Illinois	70	9	1	60	154,277	66	53
Michigan	21	4	1	16	50,388	23	20
Kansas	91	16	1	74	320,074	53	42
Nebraska	4	1	0	3	16,956	0	3
Oklahoma	80	18	1	61	320,781	84	75
Texas	221	42	6	173	974,772	243	199
North	39	9	0	30	140,240	45	40
West Central	53	15	0	38	164,042	57	40
West	42	5	1	36	207,893	31	21
Panhandle	0	0	0	0	0	2	0
East	14	2	0	12	54,662	19	7
Gulf Coast	37	7	4	26	249,022	46	44
Southwest	36	4	1	31	158,913	43	47
Louisiana	19	5	0	14	183,568	26	21
Northern	6	1	0	5	39,620	7	8
Southern	13	4	0	9	143,948	19	13
Arkansas	8	2	0	6	36,993	3	5
Mississippi	11	2	0	9	84,088	10	7
Ala., Ga., Fla.	3	0	0	3	3,470	2	3
Montana	1	1	0	0	2,251	3	0
Wyoming	4	1	0	3	25,196	12	11
Colorado	4	0	0	4	13,189	5	0
Utah	0	0	0	0	0	0	2
New Mexico	6	2	0	4	40,290	8	3
California	32	1	0	31	130,589	43	39
Miscellaneous	0	0	0	0	0	4	6
Total May 1950	663	*110	13	540	2,551,197	...	542
Total April 1950	581	83	11	497	2,439,995	...	...
Total May 1949	641	88	13	540	2,557,608	641	...

*Incl. 7 distillate wells: Okla. 2, Tex. Gulf 2, No. La. 1, So. La. 1, Miss. 1.

XUM

is the near-100 per cent failures in the Ordovician and Cambrian ventures, and the trend has swung back to shallower tests of the Silurian-Ordovician horizon. Of recent interest was the completion of the first Mississippi lime producer in eastern Breathitt County.

Mid-Continent.—Wildcatting in Oklahoma and Kansas continues active, with indications of increasing new work. Most of the activity is directed toward exploration for additional producing zones in existing pools and in gleaning the areas close around and in gaps between these pools for small high spots passed up in previous drilling plays. Many operators, particularly independents, have been very successful in this work and a substantial volume of new production has been found. Some sizable individual pools have been discovered, many relatively shallow, but realization is proving profitable.

Central and south-central Oklahoma are accounting for most of this work in the state, with Lincoln County classed as a fertile ground for new discoveries. Oklahoma's "Golden Trend" is still attractive to many operators despite previous extensive development. Wildcatting in other areas of the Anadarko Basin in the western portion of the state shows signs of accelerating.

In Kansas, the Forest City basin holds the spotlight. Revived by the discovery of Carter Oil Co. in its Davis Ranch pool, Wabaunsee County, exploration in the basin has resulted in quite a few scattered tests.

Shell Oil Co. gave prominence to the wide-open region between the Central Kansas Uplift with its Jetmore Townsite well, first production in Hodgeman County. Development along this same uplift is being carried into south-central Nebraska, following the Chadron Arch. The most northerly field in this trend was recently discovered by Alpine Oil & Royalty Co. in southern Harlan County just across the Harlan County (Kansas) line.

Rocky Mountain. — In western Nebraska, wildcat drilling has increased in the Denver-Julesburg basin, with oil and gas production established in two new pools this year. Programmed wildcat activity has probably been sustained in northeastern Colorado because of this Denver - Julesburg play.

Elsewhere in the Rocky Mountain region exploratory completions have decreased, but the rate of discoveries remains high, and there are indications that wildcat drilling will continue at a rapid rate the rest of the year.

Exploration to increase gas reserves in New Mexico's San Juan basin and Colorado has also added to the number of wells planned for the Rockies. Discovery of oil in the Glenrock area, Wyoming, began a wildcat program along the south side of the Powder River basin, and a new discovery in North Meadow Creek field increased rigs running during an unusually dormant winter and spring period.

Heretofore untested areas are being explored, and rank wildcat programs are being conducted in Nevada, Idaho, and the Dakotas. Southeastern New Mexico had added its share to new reserves by extensions and discoveries.

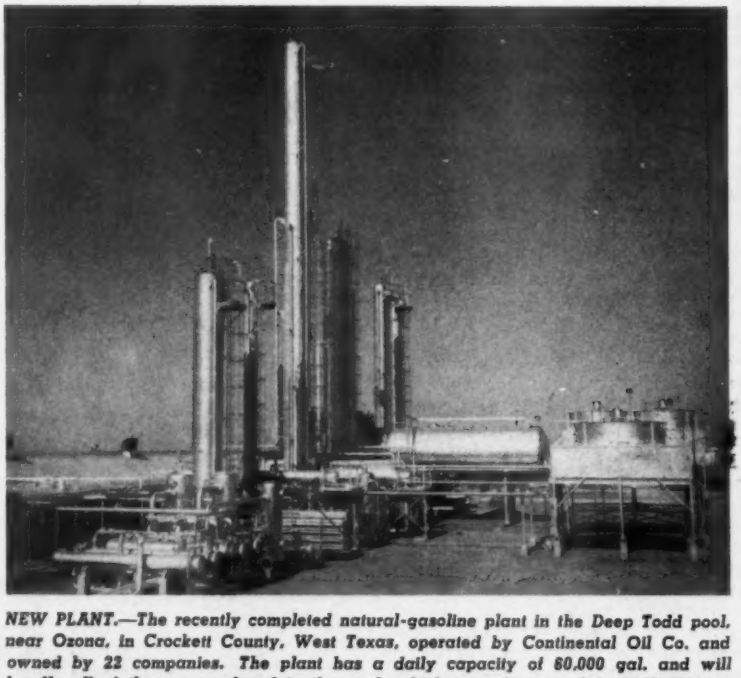
Texas.—All but two districts of Texas follow the all-out exploratory attempt. West Texas again leads the state in number and significance of strikes, and while 1949 saw some very important areas revealed by the drill 1950 bids to equal the pace, with emphasis on extensions and new pays. In fact, rapid developments in brand-new sections have caused extensions and small discoveries, which previously would have commanded attention, to be regarded as routine.

Many operators believe that 1950 will surpass 1949 in new reserves, including the huge Pennsylvanian reef development in Scurry County. Such opinions are based upon the multiple pays and prolific new pools in Midland and Upton counties, reef discoveries in Kent, Borden, Lynn, and Hockley counties, Strawn and shallower wildcats in Runnels County, Clear Fork strikes in and out of proven areas on the west side of the Permian basin, and the growing importance of Sprayberry sand production in most of these same areas.

In both North Central Texas and West Central Texas, test activity is running about the same, proportionately with field developments as in past years. Eastern Texas has increased, with a slight gain in successes. Texas Gulf Coast and Southwest Texas both declined in wildcat activity, but there have been several good discoveries in both areas.

Louisiana. — Southern Louisiana reports an increase of successful tests, and production 25 miles offshore during this year, with other large oil pools opened inland. Mississippi has had a flurry of wildcatting with eight oil fields and one gas-distillate reservoir opened in Adams County alone. Mississippi also has the deepest well ever drilled in the Gulf Coast: George Vasen 1 fee, a wildcat currently coring below 17,130 ft. Operations in the southern states of Alabama and Mississippi have gained slightly, but Florida and Georgia have fallen off.

California. — California's wildcatting has decreased, with the decline reflected in the number of big discoveries. Those new strikes which have been completed have not yet had sufficient development to establish their full importance but three seem significant. Cuyama Valley and Kern County account for most of the exploratory activity at this time.



***NEW PLANT.**—The recently completed natural-gasoline plant in the Deep Todd pool, near Ozona, in Crockett County, West Texas, operated by Continental Oil Co. and owned by 22 companies. The plant has a daily capacity of 80,000 gal. and will handle all of the gas produced in the pool, which was discovered in 1940. Unique feature of the plant is the use of an absorber-deethanizer, operating directly on the wet-gas feed. The plant was designed, engineered, and built by Refinery Maintenance Co., Inc., of Compton, Calif.*

Gas for Chicago

Work ready to start on Texas Illinois line which will make Peoples Gas the nation's largest integrated firm

C. O. Willson

CHICAGO.—With the announcement that the Federal Power Commission has approved plans for the laying of 1,330 miles of 26 and 30-in. pipe line by Texas Illinois Natural Gas Pipeline Co., extending from here to the lower Gulf Coast, Peoples Gas Light & Coke Co. is taking another major step in its steady expansion program of the past several years.

Reports in the trade indicate that contracts for the construction of the system will be let immediately with work to be under way at several points next month. The estimated cost is $117,000,000. It is understood that H. C. Price Co., Bartlesville, Okla.; Bechtel Corp., San Francisco; Midwestern Constructors Co., Tulsa, and Fish Pipeline Construction Corp., Houston, will be the principal contractors.

A. O. Smith Corp. has been awarded the contract for the pipe. The line will be 26-in. from the La Gloria area to a point near Houston where the line connects to lateral lines running to the Texas sources of supply. The main line from the point near Houston to Chicago area will be 30-in. It is understood that all the 30-in. pipe will be manufactured at a new plant at Houston jointly operated by A. O. Smith Corp. and Sheffield Steel Co. The remaining smaller diameter pipe will be manufactured at Milwaukee.

Joint venture.—The Peoples Gas Co., incorporated nearly 100 years ago and one of the nation's largest public-utility concerns, is 50 per cent owner of the Texas Illinois company, organized late last year for the purpose of bringing additional gas to the Chicago area. The other half of the company is owned by the former stockholders of the Gulfcoast Northern Gas Co., Tulsa, originators of the line, but now dissolved. *(See The Oil and Gas Journal, December 15, 1949, page 47).* Both groups of owners are represented on the board of directors of Texas Illinois, with control resting with the Peoples Gas Co.

The new line, the main features of which are shown on the accompanying map, will have an initial capacity of 305 million cubic feet daily when completed next year. With the installation of additional stations this can be increased to more than 500 million cubic feet daily.

This program means that by the fall of 1951 the Peoples Gas system, with the new and existing lines, will be delivering 800 million cubic feet of natural gas daily to customers located principally in the Chicago area. These deliveries probably will be increased to more than 1 billion cubic feet daily within the next 3 or 4 years.

With the completion of the present construction program, Peoples Gas will be the largest integrated operation of the natural-gas industry with production, transmission, and distributing facilities.

Long history.—The company became a buyer of natural gas for some of its industrial customers and for the enrichment of its artificial gas in 1931.

Top Officials

James F. Oates, Jr., who is chairman and the chief executive officer of Peoples Gas Light & Coke Co., was a practicing attorney specializing in public-utility law for a number of years before he accepted his present position on January 1, 1948. He has been prominent in civic affairs for several years. Currently he is a member of the board of trustees

J. F. OATES

J. J. HEDRICK

of Northwestern University of which he is a law graduate and is also a trustee of the Institute of Gas Technology and Museum of Science and Industry. He is a director of the First National Bank of Chicago.

Joseph J. Hedrick is president and general manager of Natural Gas Pipeline Co. of America and Texhoma Natural Gas Co. He has been associated with these companies for 20 years, being general counsel previous to his election to his present position. Previously he had 13 years experience in the oil and gas industry in various capacities. His organization will have charge of the construction and operation of the new system of the Texas Illinois Natural Gas Pipeline Co.

In that year the 24-in. line of Natural Gas Pipeline Co. of America, owned then principally by Cities Service Oil Co. and Standard Oil Co. (N. J.), was completed from the Oklahoma Panhandle to a point near Chicago. It was the largest natural-gas line built up to that time. At Gray, Okla., the Natural Gas line connected to the line of Texoma Natural Gas Co., owned by the same interests, which supplied gas from Panhandle gas field.

The Peoples Gas Co., which was a small stockholder in the original venture, in December 1948 completed the purchase of all the outstanding stock of Natural Gas Pipeline Co. of America and Texoma Natural Gas Co. Through its ownership of Texoma it has more than 132,000 acres of leaseholds in Panhandle field of Texas, with substantial gas production in that area.

A 26-in. line now parallels the original 24-in. line from Gray, Okla., to Chicago, a distance of 800 miles. The Natural Gas company also operates a 26-in. pipe line from Hugoton gas field in Oklahoma, connecting to its main transmission lines at Beaver, Okla. In addition to deliveries in the Chicago area, the Natural Gas company also has utility customers in Nebraska, Iowa, Illinois, and Wisconsin. Since the close of the war the company has built 120 miles of 20-in. line from Geneseo, Ill., to the Illinois-Wisconsin state line where the gas is delivered to another company for distribution in Wisconsin. The Texoma system also consists of dual lines from the fields to Gray, Okla.

The Natural Gas company now serves directly 15 gas utility companies operating in 80 communities. Through Chicago District Pipeline Co. three gas utility concerns, other than the Peoples Gas company, serve 254 communities in the Chicago and northwestern Indiana areas with 481,000 residential customers on December 31, 1949. These companies are Public Service Co. of Northern Illinois, Western United Gas & Electric Co., and Northern Indiana Public Service Co.

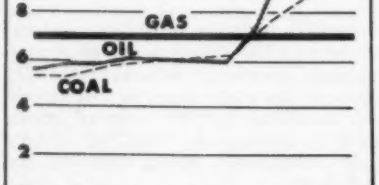
Of the gas sold by the Natural Gas company last year 38 per cent was taken by the Peoples Gas company and 42 per cent by the three utility companies. Of the remaining 20 per cent, 19 per cent was purchased directly by the other 15 gas utility companies along the line and approximately 1 per cent by main line industrial customers.

Heavy demand.—During the early depression years the expansion in natural-gas consumption in the area serviced by Natural Gas Pipeline Co. of America and associated companies was slow. Since the close of the war the demands in common with the

XUM

trends in many other parts of the United States, have greatly exceeded the supply and have necessitated additional transmission capacity including that which now has FPC approval.

Studies made here reveal the sound position of natural gas from the standpoint of consumer demand. While the charges for gas used in space heating have remained constant, prices for oil and coal have greatly increased as illustrated in the accompanying chart.



Residential space heating fuel costs in cents per therm in Chicago area. The prices are for January each year and are based on Pocahontas lump and mine run coal and No. 3 fuel oil.

According to investigations made by the Peoples Gas company early this year, a six-room residence in Chicago can be heated with gas for approximately 70 per cent of the cost of heating with oil and 82 per cent of the cost of heating with Pocahontas mine-run coal. The company now has 60,000 residential heating customers with 70,000 applications pending. The experience of other gas-utility companies in this area is similar.

The Peoples Gas company has gradually increased the percentage of natural gas blended with coke-oven gas in its sales to residential and commercial users. The gas at present has a rating of 800 B.t.u. and it is planned to step this up to 900 B.t.u. It is estimated there are approximately 400,000 one and two-family residences in Chicago which are possible users of gas for space heating. The company supplies some large industrial consumers with 100 per cent natural gas.

Observers are in agreement that natural gas in this area will not only absorb most of the new markets for fuel but if the gas is available, will be able to take additional markets away from both coal and oil. From the competitive standpoint, it is pointed out that the delivery of a billion cubic feet of natural gas annually in this area within the next 3 or 4 years will mean replacement of an oil equivalent of approximately 170,000 bbl. daily. This is figured on the basis of 6,000 cu. ft. of natural gas being equal to 1 bbl. of oil.

New facilities. — The Texas Illinois line will originate in the La Gloria field in Texas, and gas will also be obtained in Blucher and Tijernia fields north of La Gloria. Through lateral connections, additional supplies will be obtained from Old Ocean and Chocolate fields which are located 60 miles south of Houston.

The line as shown in the accompanying map will cross five major rivers in Texas, six in Arkansas, two in Missouri, the Mississippi River and a number of smaller streams. Suspension bridges will be used in crossing four of these rivers, including the Mississippi. All the work will be under the direction of the management of Natural Gas Pipeline Co. of America.

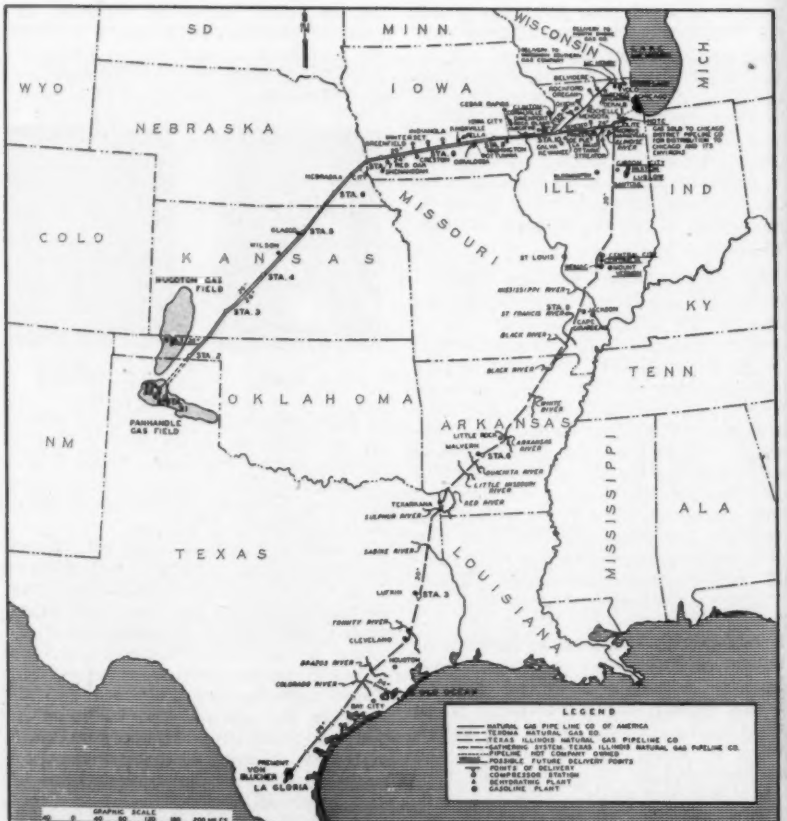
The termini of the Texas Illinois company will be points near Joliet and Volo, Ill. Most of the final distribution will be through the facilities of Chicago District Pipeline Co.

Delivery schedule. — Under the FPC authorization the Texas Illinois company is obligated to deliver 63,318,000 cu. ft. daily for the benefit of its present customers west of Joliet; Public Service Co. of Northern Illinois, 88,197,000 ft.; Northern Indiana Public Service Co., 35,522,000 ft.; Peoples Gas Light & Coke Co., 73,770,000 ft.; and Western United Gas & Electric Co., 42,892,000 cu. ft.

In addition, Texas Illinois was directed to make daily deliveries to the following companies which intervened in connection with the company's application: Union Gas & Electric Co., 2,624,000 cu. ft.; Allied Gas Co., 588,000 cu. ft.; Southeastern Illinois Gas Co., 1,800,000 cu. ft.; Monarch Gas Co., 500,000 cu. ft.; and Illinois Power Co., 3,514,000 cu. ft.

The Texas Illinois company is required to submit at least 6 months prior to the commencement of service a tariff, satisfactory to the commission, which will reflect a demand charge of not more than $2.50 per thousand cubic feet per month, and a commodity charge of not more than 16 cents per thousand cubic feet for firm service, as well as a rate of not more than 16 cents per thousand cubic feet for gas sold on an interruptible basis.

Texas Illinois had planned to finance the project through the issuance of $90,000,000 in 3¼ per cent first-mortgage bonds due in 1970, $12,000,000 in 5 per cent interim notes due January 1, 1953, convertible into 5 per cent preferred stock, and $18,000,000 in $1 par value common stock. The commission directed that the interim notes be made due January 1, 1952. All financing has been arranged. Construction work must start by August 15 this year and the entire project must be completed by the end of 1951.



New Gas Line

Plans announced for 30-in. line to southern Michigan

Leigh S. McCaslin, Jr.

HOUSTON.—Valley Gas Pipe Line Co., Inc., a newly organized firm, has made application to the Federal Power Commission to build a $144,500,000 gas artery from the Texas Gulf Coast to southern Michigan. The proposed line would tap reserves within a 100-mile radius of Houston and offshore production in the Gulf of Mexico which has been shut in for lack of market.

This is the second announcement within a week concerning utilization of gas discovered in tideland waters. Marine Gathering Co. had previously announced it would build a line to underwater gas wells of Pure Oil Co. and deliver gas to Tennessee Gas Transmission Co.

Initial capacity of the new line would be 330 million cubic feet daily. It would consist of 1,000 miles of 30-in. o.d. pipe and 500 miles of 24-in. line. Two compressor stations of 13,250 hp. each would be built initially—one at Saratoga, Tex., and the other at Poplar Bluff, Mo. The company estimates that its market will require 505 million cubic feet of gas daily by 1955. In this event, Valley Gas proposes to build additional compressor stations with a total of 70,000 compressor horsepower.

Company plans.—The company proposes to initiate construction by December 31 and complete it before April 1, 1952. Officals in Houston said construction could be started within 48 hours after approval by FPC. An engineering - construction management agreement has been made with H. K. Ferguson Co., Cleveland, and Oman Construction Co., Inc., Nashville, Tenn. Financing of the line has not been completed, but negotiations are under way.

Arrangements have been completed to acquire gas reserves which will assure the delivery of 330 million cubic feet of gas daily for a 20-year period. Also, the company says it is in a position to obtain additional reserves sufficient to increase this delivery to 505 million cubic feet if the market grows as anticipated. An expansion of the system to deliver 505 million cubic feet would bring the estimated total cost to $178,000,000.

At the maximum delivery rate, Valley Gas expects to sell 150 million cubic feet of gas in Indiana and Ohio, and 355 million in Michigan. Michigan-Wisconsin Pipe Line Co. and Panhandle Eastern Pipe Line Co. are already serving this area. Valley Gas will sell its gas for 32 cents per M.c.f. at its terminus in southern Michigan.

In petitioning the FPC, the company asserted that "the demand for gas in the areas to be served greatly exceeds the available supply." It is estimated demand for the peak day in the winter of 1950-51 at 700 million cubic feet daily, increasing to 1,500 million cubic feet on the peak day in the winter of 1956-57.

Route of line.—The new line would have two points of origin in Texas. A 24-in. line would start in the area of Berclair, Goliad County, and run northeast to Saratoga, Hardin County. There it would connect with a 24-in. line originating in the Vermilion Bay area of Louisiana.

From Saratoga, it is planned to run a 30-in. line northeast to Arcadia, La., thence to El Dorado, Ark.; Jonesboro, Ark.; Cape Girardeau, Mo.; Lawrenceville, Ill.; Terre Haute, Ind.; Atlanta, Ind.; and thence north by northeast to the terminal point in southern Michigan.

Valley Gas did not disclose what arrangements it had made to purchase offshore gas. However, Phillips Petroleum Co., Magnolia Petroleum Co., Superior Oil Co., and Pure Oil Co. all have gas or gas-distillate wells in the area.

State Allowables Raised

Louisiana, Kansas, and Oklahoma have raised their crude-oil allowables for July.

Louisiana's daily allowable has been set at 600,835 bbl. for July, compared with current daily allowable of 591,135 bbl.

The Kansas Corporation Commission increased the state's allowable by 5,000 bbl. daily, to 300,000 bbl.

The Oklahoma Corporation Commission set July crude production at 454,925 bbl. daily, compared with 453,105 bbl. daily in June.

MEETINGS

P.E.S.A. Elects

Sutter to head suppliers' group during coming year

WHITE SULPHUR SPRINGS, W. Va.—Ted Sutter, vice president of Baker Oil Tools, Inc., Los Angeles, was elected president of the Petroleum Equipment Suppliers Association at the annual meeting of the association here June 25-27.

TED SUTTER

F. M. Mayer, president of Continental Supply Co., Dallas, was elected vice president. Reelected were H. R. Safford, Jr., executive secretary, and Wharton Weems, treasurer, both of Dallas.

The principal address at the Monday session was by Dr. Waldo E. Stephens, executive vice president of Stephens Petroleum Co., Oklahoma City. Speaking on "The Place of Oil on Our World Program," he paid special tribute to association members for their great contribution in development and improvement of tools which make economical the production of oil at greater and greater depths throughout the world.

At the Tuesday session David T. Serls of the legal firm of Vinson, Elkins & Weems addressed the group on "Business Management Under the Antitrust Laws."

As directors for the following year the P.E.S.A. elected the following:

Eastern district.—George H. Alten, Alten's Foundry Works, Inc., Lancaster, Ohio; Karl Elliott, Acme Fishing Tool Co., Parkersburg, W. Va.; Jene Harper, Franklin Supply Co., Chicago; Mason Jones, S. M. Jones Co., Toledo; Lloyd Lamphere, Ajax Iron Works, Corry, Pa.; A. S. Knowles, Parkersburg Rig & Reel Co., Parkersburg, W. Va.; Donald W. Mackie, Bradford Supply Co., Bradford, Pa.; Frederick F. Murray, Oil Well Supply Co., Dallas; A. W. McKinney, National Supply Co., Toledo; Ford J. Spang, Spang & Co., Butler, Pa.; H. Bernard Wehrle, McJunkin Supply Co., Charleston, W. Va.; and J. Mark Gardner, International Derrick & Equipment Co.

Mid-Continent and Rocky Mountain.—Frank E. Bernsen, Lucey Products Corp., Tulsa; E. C. Bolger, W. C. Norris, Manufacturer, Tulsa; Davis D. Bovaird, Bovaird Supply Co., Tulsa; R. A. Campbell, Hinderliter Tool Co. Div., H. K. Porter Co., Tulsa; S. J. Iverson, Iverson Supply Co., Fort Worth; W. H. Larkin, Larkin Packer Co., St. Louis; Walter O'Bannon, Walter O'Bannon Co., Tulsa; J. L. Shakely, Jones & Laughlin Supply Co., Tulsa; Guy A. Tompson, Bethlehem Supply Co., Tulsa; Jay P. Walker, National Tank Co., Tulsa; S. P. Wallace, Maloney-Crawford Tank & Mfg. Co., Tulsa; and Carl White, Jr., Franks Manufacturing Corp., Tulsa.

Southwestern District.—W. T. Campbell, Mission Manufacturing Co., Houston; H. B. Catlow, Republic Supply Co., Houston; Ken W. Davis, Mid-Continent Supply Co., Fort Worth; J. E. Everroad, Cummins Sales & Service, Inc., Fort Worth; R. G. Hamaker, Reed Roller Bit Co., Houston; Frank Hereford, Murray-Brooks, Inc., Lake Charles, La.; E. L. Lorehn, Cameron Iron Works, Houston; Fred M. Mayer, Continental Supply Co., Dallas; Ralph Neuhaus, Hughes Tool Co., Houston; George O'Leary, Houston Oil Field Mtl. Co., Houston; W. Howard Pape, Jarecki Manufacturing Co., Houston; and Wallace D. Wilson, Wilson Supply Co., Houston.

Pacific District.—J. C. Axelson, Axelson Manufacturing Co., Los Angeles; Markley C. Brown, Hillman - Kelley, Los Angeles; J. A. Crawford, Youngstown Steel Products Co., Los Angeles; E. S. Dulin, Byron Jackson Co., Los Angeles; Rodney S. Durkee, Lane-Wells Co., Los Angeles; D. S. Faulkner, National Supply Co. of California, Torrance; H. H. Glen, Emsco Derrick & Equipment Co., Los Angeles; H. E. Howard, Howard Supply Co., Los Angeles; Wendell Jones, Bethlehem Supply Co. of Calif., Los Angeles; Warner Parker, Oil Well Supply Co., Los Angeles; and John J. Pike, Republic Supply Co. of Calif., Los Angeles.

A.S.T.M. Meeting

ATLANTIC CITY.—New tentative specifications for diesel fuel oils and other recommended changes in testing methods will this week occupy attention of members of Committee D-2 on Petroleum Products and Lubricants at the fifty-third annual meeting of the

XUM

American Society for Testing Materials.

Meeting under O. L. Maag, of Timken Roller Bearing Co., the committee will elect new officers, including a new chairman to succeed C. Dantsizen, who served for 3 years before his resignation last August.

Reorganization of the parent committee, under way for the past 3 years, is now nearly complete. The group now comprises 11 technical committees, 11 research divisions, 5 special subcommittees, and 5 coordinating divisions.

Proposed revisions to the Tentative Specifications for Diesel Fuel Oils, having been approved by Technical Committee F, are being referred to Committee D-2 which in turn will take them under consideration and may submit them forward to the society.

Technical Committee A on gasoline has continued the study of properties of motor fuels and has proposed that the Tentative Specifications for Gasoline be revised to raise the 13.5-lb. maximum Reid vapor pressure to 15.0 lb. for the winter fuel. A section of this committee is continuing the study of climatological data and their relationship to motor-fuel volatility as those data are made available by the Weather Bureau.

MIDWEST

Kentucky Meeting

Diederich named president of association for 1950-51

LEXINGTON. — John T. Diederich, independent producer of Ashland, Ky., was reelected president of the Kentucky Oil and Gas Association at the annual midyear meeting here June 22-23.

Also reelected for the coming year were the four vice presidents, P. C. Van Gilst, retired oil producer, Ashland; M. G. Powers, Bed Rock Oil Co., Huntington, W. Va.; Karl Z. Wilking, partner, R. E. Hupp et al, Owensboro; E. L. McDonald, Lexington attorney for Ashland Oil & Refining Co., was renamed secretary, and J. C. Preston, Owensboro, continues as executive secretary and treasurer.

The 2-day meeting was marked by a series of technical papers on production and exploration problems of the Kentucky region, and addresses on general problems of the nation's oil industry.

Acidizing.—A detailed description of the acidization of Mississippian Big Lime formation in eastern Kentucky was presented by David M. Young, geologist of Kentucky-West Virginia Gas Co., Prestonburg. He explained that procedures vary among companies operating in the Appalachian area and that the practices of his company are somewhat different from those of others. He warned, however, that there is no accurate method of measuring the efficiency of the various methods, saying:

"In reviewing the results of acidization, attention is called to the fact that open flows are the yardstick by which success or failure is gaged. It is realized that open flows do not give a true picture of acidizing results nor of production results from any source.

"Open flows for acidized wells are taken with considerable variation in flowing time prior to gaging. As practically all acidized wells are treated after being drilled in, there is no preacidization delivery quantity available. So, misleading as it may be, open flows have been used to record acidizing success or failure, and any consideration of results based upon open flow must be made with this in mind and taken with the proverbial grain of salt."

Difficult traps. — The permeability type of oil trap poses difficult problems for geologists in locating oil in western Kentucky, it was explained by J. B. Vaughn, geologist with Ashland Oil & Refining Co., Henderson.

Along with the rest of the world, he said, 50 per cent of the oil produced in western Kentucky comes from reservoirs with structural closures, in local anticlines and domes without complications, showing that geologists have done as good a job here as anywhere. However, the second most important reservoirs in the area are caused by variations in the distribution of sandstones, or by differences of porosity in the sediments deposited, he said, adding:

"Under the classification of permeability trap falls the McClosky of western Kentucky. These oolitic McClosky zones occur in nests and patches in lithographic limestone, in thick, lenticular, poorly cemented masses, and in beds composed largely of calcareous detritus. Since these oolitic masses occur in lenticular bodies and may produce oil with or without structural relief, the same as our so-called shoestring sand leases, they will always pose a problem for geologists."

Fuel policy.—J. Ed Warren, Midland, Tex., president of the Independent Petroleum Association of America, warned the Kentucky producers that competitve opportunity in the oil industry is threatened by what he called a philosophy of controlism. The advocates of this, he said, are those who brought about the veto of the Kerr natural-gas bill, attacked the oil depletion allowance, and support government operation of offshore oil, declaring:

"We are in the line of their fire. Note carefully, if you will, and if you value your business freedom, the proposals to establish something that is elegantly styled a national policy on fuels. Your own imagination can take you down the road the rest of the way—a national board deciding upon 'inferior' and 'superior' uses of coal, oil, gas, electricity, and on down to cordwood and corncobs, the latter now being the subject of consideration as a source of power alcohol.

"Government management of industry means political management.

Officers of the Kentucky Oil and Gas Association reelected June 23: seated, M. G. Powers, vice president; John T. Diederich, president; J. C. Preston, executive secretary-treasurer; standing, Karl Z. Wilking, vice president; M. A. Arvin, past president, and Frank J. Zogg, vice president.

Political management has historically been mismanagement and destroys the principles of progress, efficiency, and individual effort. Concentration of power in government to control our industry will react first on the independent oil man and it is therefore important that independents must be extra vigilant in fighting this trend."

Octane Competition

Midwest refiners hard pressed to keep up with demands for top-grade fuel; higher costs may reflect in prices

CHICAGO.—As the sale of motor fuels moves into the peak period of the year with gains of 5 per cent or more over the corresponding period of last summer, the matter of comparative octane ratings appears to be the principal subject of discussion among refiners and distributors.

It is admitted that this area and the entire Middle West, including the Mid-Continent, has been behind the rest of the country in the "octane race" which has been particularly outstanding in the eastern and coastal areas over the past year. But developments over the past few weeks indicate that this part of the country may catch up with other sections in the matter of octane ratings shortly.

It is explained that several refineries in this area, including plants in adjoining sections with product pipeline terminals in the upper Middle West, have recently added to their high-octane processing facilities, including catalytic cracking and reforming units. In several cases they have added two or more octane numbers to both their regular and premium grades and in exceptional cases three to five points.

General increase. — Recognizing this situation, Ethyl Corp. recently announced that effective September 1 the minimum octane rating on "Ethyl" (its premium grade) would be 88 octane, an increase of 2 octanes. The ratings in all cases are by A.S.T.M. research method. Actually most companies are already selling a premium grade in excess of 88 octane. A premium rating of 90 octane is common in this immediate area. There is more variation in the regular grade motor fuels, for which Ethyl Corp. has no minimum requirements but these ratings now are generally 80 or better.

A special situation exists in eastern Michigan centering in Detroit. In that area a large eastern refinery organization has recently advanced the octane rating of the one grade that it sells to 85 and 86 octane, which is equal to the octane rating of the premium fuels sold in the Middle West up to recent months. This company, for the first time in its history, recently started the use of tetraethyl fluid to improve the octane rating of its one grade and has also greatly increased the catalytic cracking and other high-octane processing facilities at its Toledo, Ohio, refinery.

The action of this company in Detroit and adjoining areas has forced many refiners to increase the octane rating of their regular-grade motor fuels to 84 or better, with premium grades 91 octane or better. Ratings as high as 93 have been reported in Detroit and Ohio over the past month.

In some circles there is a tendency to condemn refiners and distributors for going "wild" in the matter of octane ratings. It is maintained that a great majority of the cars now in use do not require motor fuels in excess of 78 in the case of regular-grade fuels and 86 in the case of premium fuels. It is pointed out that the higher ratings require large capital expenditures for new equipment and high operating costs, particularly because of greater losses in refining the highest-octane fuels.

It is admitted that some of the newer engines do require much higher octane fuels. One large marketer said that his company had complaints from customers with the "Rocket" type engines with fuels below 90 octane. Because of the improved performance, particularly in the matter of pickup, the highest-compression engines are proving popular with buyers.

Affects marketing. — The higher octane levels have brought new marketing practices. Some refiners and jobbers are buying high-octane fractions from other refiners with surplus supplies in order to bring their regular and premium grades in line with the requirements of their areas. Interrefinery sales of alkylate—the product first produced in war plants in the manufacture of aviation gasoline—and other high-octane blending materials are reported.

In this connection one large refiner and distributor says that its costs in advancing its premium-grade gasoline several octanes over the last year are in excess of ½ cent per gallon. Some predicted that, as a result of the octane race, there will be general price advances in both regular and premium grades before the end of the summer. Other observers agree that production costs are greater but feel that advances in wholesale and retail prices will be difficult to make effective because of the keen competitive situation that exists in the sale of motor fuels.

While there have been predictions that a third-grade motor fuel would be introduced in this area, most marketers do not believe it will materialize. The third grade would have lower octane ratings but would give satisfactory performance in the older cars and many of the new cars. It is pointed out that the high cost of marketing a third-grade gasoline would mean that the saving to the user would necessarily be small. The third grade is strictly a depression product, according to one veteran marketer.

DEDICATED.—General view of the fractionating section of the North Cowden natural-gasoline plant near Odessa, Tex., to be formally opened July 1, operated by Stanolind Oil & Gas Co. for the 21 owners as part of one of the world's largest cooperative gas-injection projects. It will handle 50,000,000 cu. ft. of gas daily, most of which will be used for repressuring, but is so constructed that the capacity can be doubled. It will produce 150,000 gal. of liquid products daily at present capacity.

XUM

Oil Treaty Abrogated

Quota provisions of old Venezuelan agreement again to be effective; act expected to soften effects on Keogh report

Bertram F. Linz

WASHINGTON.—The long-expected abrogation of the Mexican reciprocal trade agreement was announced by the State Department last week, effective December 31.

Considered the administration's answer to the demand that it "do something" about the oil-import situation, the scrapping of the agreement will bring back into operation next January 1 the quota provisions of the Venezuelan agreement of 1939, under which the reduced import tax of 10½ cents per barrel applies only to receipts up to 5 per cent of the previous year's throughput of United States refineries and imports in excess of that amount will pay the full rate of 21 cents per barrel.

State Department officials estimated that had the quota system been in effect last year only 97,000,000 of the 207,000,000 bbl. of crude, topped crude, and fuel oil would have come in at the reduced rate.

Countries affected.—The Mexican trade agreement is the second to be torn up since the end of the war, the pact with Colombia having been terminated last November 30. In these cases, the Latin American countries are without any special trading arrangement with the United States, not being subscribers to the General Agreement on Tariffs and Trade negotiated 2 years ago at Geneva.

So far as oil is concerned, the termination next December of the Mexican treaty will be tougher on Venezuela, the Dutch West Indies, Colombia, Kuwait, and Saudi Arabia than it will be on Mexico, for each of those countries has been sending larger volumes of oil to the United States.

Last year, Venezuela accounted for 51.06 per cent of our imports, the Dutch West Indies, 20.85; Kuwait, 11.14; Saudi Arabia, 6.02; Colombia, 5.61, and Mexico, 3.66, with a little more than half of 1 per cent coming in from Iran.

When the provisions of the Venezuelan trade agreement again become effective, the Government will have to announce the quota for 1951 based on 1950 throughput of refineries in the continental United States. The various agencies which are interested in oil are now studying the question of whether to make country allocations, as was done before the Mexican agreement.

There is no requirement in law that the over-all quota be broken down by countries, and the suggestion has been put forth that it might be possible to handle the situation without allocations, which would be difficult to arrive at because of the fact that the Middle East is now an important supplier of oil.

The termination of the agreement was announced jointly by the United States and Mexican governments, which have been attempting since 1948 to find some way out of the situation created by the restriction of imports into Mexico in 1947.

The announcement and notes of the two governments make no mention of the fact but United States officials have charged that Mexico violated the agreement in a number of ways beyond those cited as the reason for abrogation and Mexico, in turn, has leveled similar charges against the United States.

Only action expected.—Coming on the heels of a number of investigations of oil imports by congressional committees, the State Department's announcement is expected to pave the way for the only action the administration will take, this year at least, to meet the demands for curtailment.

The department's action took the heat out of a report prepared by Rep. Eugene J. Keogh of New York, chairman of a House small business subcommittee which investigated imports, recommending that the report be submitted to the President with a request that he review existing trade agreements and take action thereunder.

A similar suggestion is understood to have been planned by Sen. Matthew M. Neely of West Virginia, chairman of another subcommittee also interested in the subject, but postponement of the deadline for the filing of his report will give him a chance to modify it.

Keogh report.—The Keogh report recommended that before Congress enact legislation the facts of the situation should be reexamined in the light of conditions then existing, but if legislation is determined upon it should take the following form:

"A bill or joint resolution, the purpose of which in substance would be to aid in the stabilization of the economy of the United States, to aid in preserving a healthy domestic petroleum industry, to aid in insuring adequate petroleum reserves for the national defense, to aid in the establishment of reasonable levels of imports of crude petroleum products, and to otherwise stabilize and maintain adequate supplies of such products at reasonable prices for the American consumer.

"The legislation should provide, in order to carry out these purposes, that the President be authorized to consult with representatives of all segments of the petroleum industry, both large and small, as well as representatives of the National Military Establishment, state conservation officials, the Department of State, the Departments of Interior and Commerce, all with a view to encouraging the making of voluntary agreements, approved by the President, to control the importation of foreign-produced petroleum products into the United States.

"This legislation should further provide that agreements reached be subject to review by the office of the attorney general to preclude activities which might otherwise be in violation of the antitrust laws."

The report stressed the difficulty of determining the level at which imports would adversely affect the domestic industry, but held that some imports of crude oil have been in excess of reasonable levels for several months and have had an adverse effect on some domestic producers, principally through a diminution of income.

Excessive crude imports or fear of further increases have contributed to curtailment in leasing and geophysical activities, the subcommittee found, and imports of residual fuel during the past 17 months have "undoubtedly displaced some domestic crude-oil production and had a depressive effect on some segments of the domestic petroleum industry.

"In the light, however, of other pertinent factors such as consumers interest, conservation by improved refining techniques, international trade relationships and other factors," the report continued, "it is believed that the disadvantages of displacement have from a national point of view been offset by the advantages."

The policy that imports should be permitted to supplement but not supplant domestic production, the subcommittee held, "while good in theory for some segments of the oil industry, if enforced according to strict interpretations, might possibly create repercussions in international relationships, international trade, domestic employment and high cost to consumers."

The National Petroleum Council was commended for its services and studies which the subcommittee believes will in large measure eliminate misunderstandings between various segments of the industry and be help-

ful in permitting the industry to solve its own problems with a minimum of difficulty and ill feeling.

Western Plea

Percentage of production asked for homestead lands

WASHINGTON.—Legislation which would give owners of surface rights on homestead lands 1 per cent of the value of oil or gas produced therefrom by holders of government leases is being pressed in Congress by Rep. Frank A. Barrett of Wyoming.

Ten days after he introduced the bill, a Public Lands subcommittee held a hearing with a view to sending it to the floor this session.

The bill provides that in all cases land has been acquired by homestead entry, subject to a reservation by the Government of the mineral rights, any lease for oil or mineral development hereafter made shall provide in lieu of damages, for the assignment of the value of 1 per cent of the production, to be payable equally by the United States and the lessee.

Explaining his measure to the subcommittee, Barrett warned that the Interior Department would oppose it and said "I find it is not possible at all to get any fair deal from this administration."

Asserting that the Government goes all out to aid foreign countries, no matter how remote, Barrett declared, "I am convinced that the people of the East are highly unreasonable and have no sense of honesty, integrity, or decency when it comes to the western states."

Barrett declared that until the turn of the century, the Government gave homesteaders the mineral as well as the surface rights to their lands, but began to reserve the mineral when it adopted the stock-raising homestead acts under which the Far West was settled.

Ranchers who have spent years in building up their operations are practically forced to abandon their holdings when oil development is undertaken because of the many derricks, roads, and trails which cut up the property and the contamination of water sources. There are provisions in the law for payment of damages, Barrett said, but they are highly inadequate and difficult of enforcement.

Barrett told the subcommittee that the Union Pacific Railroad, which received large grants of land from the Government, has sold much of its land with a reservation of mineral rights, but when it disposes of the latter provides in all leases that the holder of the surface shall receive 2½ per cent from the oil or mineral production. His proposed payment of 1 per cent, he said, would cost the Government less than one-third of the royalty it receives.

As Barrett predicted, the Interior Department opposed the bill, although Marion F. Clawson, director of the Bureau of Land Management, said he had not had time in which to prepare a written report.

Clawson told the subcommittee, however, that the situation outlined by Barrett is a serious problem and something should be done about it, but he felt it could best be approached by writing provisions into the law for settlement of damage claims by negotiations between surface owners and oil operators and through the local courts.

Mexican Loan?

Reports insist top-level talks involve big figure

WASHINGTON.—Rumors persist in Washington that an oil loan to Mexico is in the making, possibly exceeding the $200,000,000 originally sought last year.

The reports that Mexico finally is to receive U. S. aid for oil development were sparked last week as Sen. Antonio J. Bermudez, managing director of Petroleos Mexicanos, sent a check for $1,017,944 to the Export-Import Bank in final payment on the $10,000,000 loan granted in May 1944 6 weeks before it was due.

The early liquidation of the debt, Bermudez said, was the best available "practical symbol to acknowledge our gratefulness to the Government of the United States and to the Export-Import Bank for their timely cooperation, which enabled us to erect a refinery of 50,000 bbl. daily throughput in Mexico City, among other purposes for the manufacture of high-octane aviation fuel."

Bermudez made a short report to the bank that the objectives for which the loan was extended have been fulfilled and the Mexico City refinery supplies the heavily populated and industrial areas of Central Mexico with oil products and practically all national requirements of commercial and military aviation gasoline. The loan, he said, represented 31 per cent of the $32,200,000 cost of the refinery and complementary installation at the Poza Rica oil field.

If negotiations for a loan are now coming to a head, they apparently are being conducted at the White House level, and State Department spokesmen disclaim any knowledge of new developments in the situation which arose last July when negotiations were broken off by mutual agreement of the Washington and Mexico City governments.

While the rumors are that the loan is imminent and may follow on the heels of announcement of the abrogation of the Mexican reciprocal trade agreement, some observers believe it may be held up until after Congress adjourns so as to avoid precipitating a new controversy over the oil-import situation, which is to be discussed in two reports expected momentarily to be submitted to the House and Senate by committees which have been investigating the subject.

Senate Confirms Smith

WASHINGTON.—The Senate last week confirmed the nomination of Nelson Lee Smith for another 5-year term as a member of the Federal Power Commission.

Smith's confirmation was recom-

CABLE RIG.—Although the Permian Basin features the biggest rotary rigs for extremely deep drilling, the cable-tool outfit has not been displaced. The rig pictured is typical of the cable tools, drilling a relatively shallow well of about 2,800 ft. There are several hundred such rigs in the Permian Basin either doing cleanout work, drilling in, or drilling from the surface down. There are many areas ignored by rotary drillers that lend themselves to cable-tool work.

XUM

mended after an appearance before the Senate interstate commerce committee where he explained his views on natural-gas matters, pointing out that he had approved proposals to exempt independent producers and gatherers of natural gas from FPC control.

First appointed to the commission in 1934 to fill an unexpired term, Smith was given a full-time appointment from June 22, 1945.

FTC Watchdog

Committee named to keep eye on agency's activities

WASHINGTON.—Serving notice on President Truman that the fight over basing-point pricing was not ended with veto of the O'Mahoney bill to permit individual sellers to quote delivered prices and absorb freight, Sen. Edwin C. Johnson of Colorado, chairman of the Senate interstate commerce committee, set up a "watchdog" subcommittee last week to "exercise continuous watchfulness" over the activities of the Federal Trade Commission.

Johnson himself will serve as chairman of the subcommittee, to which he named Sens. Francis J. Myers of Pennsylvania, Herbert R. O'Conor of Maryland, Homer E. Capehart of Indiana, and John W. Bricker of Ohio.

Johnson served notice on the FTC that "whether or not new legislation will be necessary in the Eighty-second Congress will depend upon how the commission responds to the overwhelmingly expressed demand of both houses of Congress and the clear implication in the President's veto message of a need for assurance to businessmen of their right to engage in competitive pricing practices including the absorption of freight."

Picking up the President's statement that clarification of the antitrust laws can be expected when decisions are reached in a number of cases under consideration by the FTC and the courts, Johnson expressed the view that while this was contrary to the constitutional duty of Congress to make the laws "it does place a new responsibility on the Federal Trade Commission and points the finger at source of present confusion."

The frequent shifts in position by the commission, particularly its early approval and later disapproval of the O'Mahoney bill, Johnson declared, "destroyed public confidence and required continued close day-by-day watchfulness over its activities in this field."

To help the subcommittee keep in touch with its activities, Johnson said he will ask the commission to submit copies of all orders, decisions, briefs, pleadings, and other papers which may hereafter be publicly filed in any of the pending cases referred to in the President's veto message.

WATCHING WASHINGTON

Bertram F. Linz

Little-Business Battle

Arguments against President Truman's proposals for aid to small businesses are piling up, and congressional enthusiasm is dropping in direct ratio.

It has been estimated that two out of every three persons would like to go into business for themselves. Government aid might make that possible, but experience over the years has shown that a large proportion of new enterprises dies in their infancy.

More to the point, it is charged that the proposals could be the first step toward socialization of our economy. With the pressure for small loans that would develop, the financing of small business might quickly become purely a federal function which eventually might be extended to all business, whereup the necessity of protecting its investments might compel the Government to take a hand in management and so direct production and other activities that all its borrowers could do enough business to pay off their loans.

There is little likelihood of any action this year, but the idea undoubtedly will be revived when the new Congress meets next January and may be one of the major items on the 1951 program.

Pricing Stop-Gap

Veto of the O'Mahoney delivered pricing bill by President Truman has aroused speculation in Washington over the possibility of some type of stop-gap legislation. The most likely step in that direction is the revival of a proposal for a moratorium on delivered pricing prosecutions.

The President's action is seen as definitely halting any further effort to develop a comprehensive new bill this session, but those who have been fighting for a congressionally-fixed line between what is legal and what is illegal in the form of pricing are represented as determined to continue to press the issue.

In industry circles little weight is given the President's statements in his veto message that much of the uncertainty created by the Supreme Court decision in the Cement Institute case has been eliminated by subsequent developments and that cases now under consideration by the Federal Trade Commission and the courts will further clarify the situation.

It is pointed out that much of this "clarification" would be by the FTC, which initiated the Cement Institute case and, further, that FTC rulings are seldom upset by the courts. There is no reason to believe the commission ever would interpret any law which it administers in such a way as to weaken it.

Legally, as the President indicated and the commission has stated, there is no bar to freight absorption or delivered prices "as such." But the present law leaves it up to the FTC to determine whether the seller who adopts those practices comes under the "as such" or is suppressing competition, discriminating in price, or otherwise violating the law.

Drastic Do-Gooder

Most persistent, if not the most successful, lobby operating in the National Capitol is the People's Lobby represented by the venerable Ben Marsh, who has been fighting "Big Business" for many years at a salary an elevator operator probably would turn down.

Ben's latest brainchild is nationalization of the fuel industries—oil, gas, coal, and water-power—and he has asked President Truman to call for legislation creating a corporation to acquire the assets of all the companies in those fields, by negotiation or eminent domain.

Marsh had some unkind words for the fuel producers of the country in his letter to the President in which he said wistfully the consumers of America can't organize to get temporary immunity, as does organized labor, from the inflationary effects of welfare-state legislation.

"The rapaciousness of would-be profiteers in off-shore oil and inshore water power, oil, coal, and natural gas, and the fact that development of these four competing sources of energy must be coordinated, and cannot be, under private control, are sufficient reasons for public ownership," he declared.

The railroads, too, should be nationalized and, Marsh said, since under the total mobilization of a hot-war economy not only energy sources and railroads, but the entire national economy would be placed under government control, if not ownership, there is no reason why nationalization should not be undertaken now.

Alberta Gas

Contest heightens over who will pipe gas to Pacific Coast and whether the route will be north or south

Dahl M. Duff

THE contest over the right to sell Alberta natural gas to the population and industrial centers of the Pacific Northwest has become intensified now that advocates of the "southern route" have attained equal legal footing with the champion of the "all Canadian," or northern, route.

Three companies are seeking permission to build a pipe line westward out of Alberta. The tentative routes of two of the proposals are shown on the accompanying map. Only one line is economically feasible, and the matter is now before provincial government officials of Alberta for decision.

The northern route via Yellowhead Pass is advocated by Westcoast Transmission Co., the earliest applicant *(The Oil and Gas Journal, February 2, page 28, and May 18, page 99)*.

The southern route is favored by Northwest Natural Gas Co., an active contender. A third company, Prairie Gas Transmission Co., also seeks to build a line south of the border, but has not yet mapped a route.

Three steps.—Before any line can be built, three separate proceedings are necessary in Canada. First, the companies need national incorporation charters from the Canadian Parliament in Ottawa. Westcoast obtained its charter months ago and thus got a head start. Recently Northwest Natural's affiliates and the Prairie company have received charters so all three contenders have passed the first hurdle.

The second step is currently taking place. This consists of the hearings before the Alberta Petroleum and Natural Gas Conservation Board in Calgary on the matter of a permit to export gas out of the province itself. These hearings are scheduled to be resumed this fall. The board has said it will make no report until all applicants have been heard, but there is a possibility of a decision early next year.

The successful applicant for the Pacific Coast line must then obtain authorization from the Dominion Board of Transport Commissioners. This group has said it will not act until after the Alberta Government. Thus, the controlling decision is expected to be that made by the officials of the province.

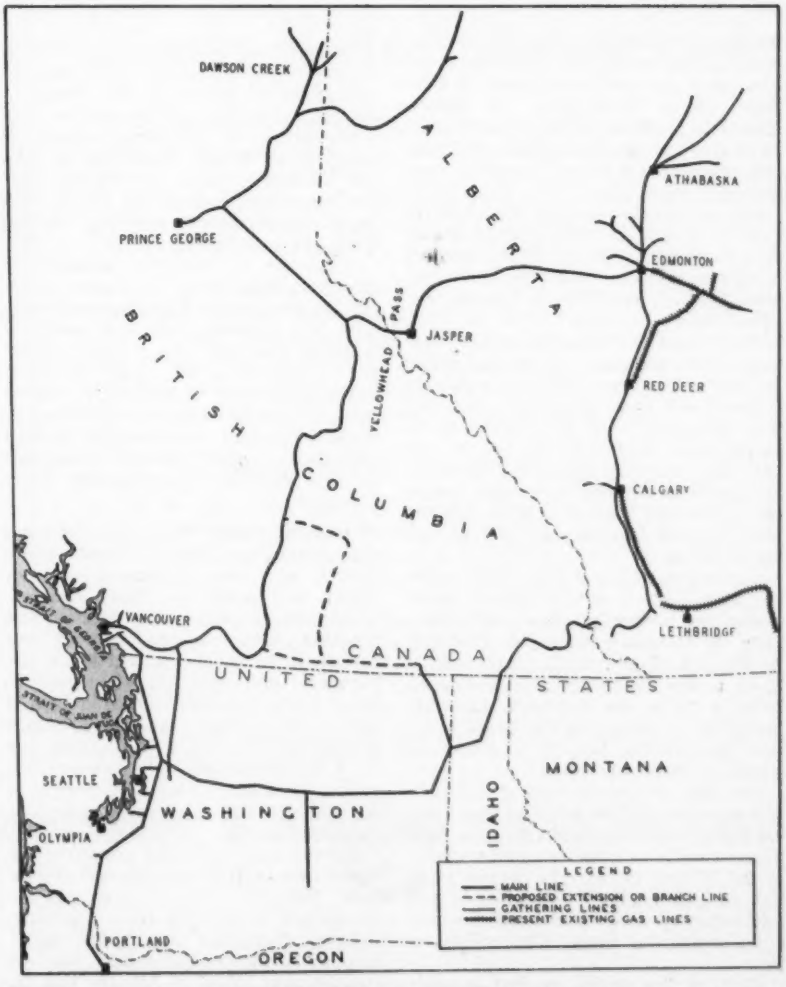
Northwest Natural and Westcoast have put forward detailed testimony and evidence in support of each particular project. Further material will be entered into the record this fall. Just which company will come out on top with an Alberta export permit is a matter of conjecture.

Local interest.—The all-Canadian route has attracted some support in Canada, particularly among those Canadians who feel that Canadian requirements should take precedence over those in the United States. The Westcoast case has, for example, been endorsed by the British Columbia attorney general who took the position that this gas line would open up and assist in the development of much wilderness territory in the province.

Against this are the arguments for Northwest Natural's route. This company's case rests on the basis that the greater markets reached by the southern system would enable the gas to be sold at a competitive price with oil, would allow a much higher load factor, and would be by far the cheaper to construct and the easier to maintain.

The Westcoast company was originated by Pacific Petroleums, Ltd., a western Canada producing company. Eastman, Dillon & Co., New York, is to handle financing. The length of main line for this project would be 1,025 miles, with 119 miles of branch lines and 426 miles of gathering lines for an aggregate of 1,570 miles.

The proposal calls for 2,400 hp. total in compressor stations the first year, increased to 7,200 hp. the fifth



General routes proposed by the two chief present contenders for the right to pipe natural gas to the Pacific Northwest.

XUM

year. Twenty-four-inch pipe would be laid from Edmonton to the United States border, a distance of 725 miles. A 40-mile, 14-in. line would connect the Vancouver area. The 300 miles of line in the United States would be 24 and 22-in.

Cost of the Canadian section of this project is placed at $95,000,000, with an additional $19,000,000 for the United States section. Evidence submitted by engineers of Ford, Bacon & Davis showed that the line would be serving 2,500,000 persons by 1955 when it would be delivering at the rate of about 155,000,000 cu. ft. daily. The Westcoast company has emphasized the rapidly increasing population in British Columbia as well as in the Pacific Northwest.

Westcoast contends that the terrain difficulties presented by the northern route are no greater than those that have been met and overcome in natural-gas lines in many parts of the United States. Although the route has some tough spots, there is nothing that modern engineering skill could not handle with safety and reasonable economy.

Southern argument.—Northwest Natural is backed by the New York engineering and geological firm of Brokaw, Dixon & McKee. A. Faison Dixon is president of Northwest Natural and its two Canadian affiliates, Alberta Natural Gas Co. and Alberta Natural Gas Grid, Ltd. The latter company would operate the Alberta gathering system. The United States and Canadian sections of this project would be built and operated by Northwest Natural and Alberta Natural, respectively.

Northwest Natural Gas has surveyed five separate routes, and plans to make a survey of the northern Yellowhead Pass route this summer. The company said that although it is prepared to build any one of the six that may be approved, there is no question but that the route across the State of Washington is by far the cheapest to construct and easiest to maintain.

Northwest Natural also plans a 24-in. main line. It would extend south across the border into Idaho at Kingsgate, B. C., reach across Washington to Monroe, then branch north with a 22-in. to the Vancouver area and south with a 20-in. to Portland. Laterals would serve Kimberly and Trail, B. C., and the Atomic Energy Commission plant at Hanford, Wash.

The line would operate at a working pressure of 750 psi. The company estimates that annual sales would equal a daily average of approximately 205,000,000 cu. ft. The whole project, including about 650 miles in the gathering system, would call for the construction of some 1,700 miles of line.

Cost of the entire project is estimated at from $100,000,000 to $215,000,000. Of this amount, the gathering system would take in excess of $25,000,000. Depending on the route finally approved by the Board of Transport Commissioners, between $65,000,000 and $85,000,000 would be spent on the main line. Morgan, Stanley & Co., New York, heads a group of United States and Canadian banking firms prepared to arrange financing.

Advantages claimed.—"All of our southern routes offer many obvious advantages over the Yellowhead Pass route which starts near the southern border of Alberta, then goes north, then west, then south, then west to Vancouver and south across the border into Washington and Oregon," said Northwest Natural's brief to the Alberta Conservation Board.

"Not including the customers in the region around Vancouver and the Pacific Coast area of the United States, which all pipe-line routes propose to serve, any of our southern routes would supply gas to 32,000 people in nonmetropolitan areas of British Columbia, as compared to 15,000 people in that province who could be served by the northern project.

"Any of our southern routes would supply 3,700,000,000 cu. ft. a year to industries at Kimberly and Trail, in British Columbia, as compared to only 1,200,000,000 cu. ft. which could be supplied to British Columbia outside the Vancouver area by the northern line. Our southern routes would also serve 14,000 people not now served with gas in Alberta.

"Gas can be delivered cheaper to the customers while a higher price can be paid to the Albertan producers by a line following our most southerly route than any of our other southern routes or a line going through northern British Columbia. A higher price to the producers will stimulate exploration and development as well as give the royalty owner (principally the Alberta Government) more money."

Provincial needs.—From a strict legal standpoint, the Alberta Conservation Board, and the provincial cabinet, which will make the final decision, is concerned only with determining whether Alberta's gas reserves are sufficient to meet the needs of the province and also allow export to other parts of Canada and the United States. Two years ago the province announced a policy of no export until Alberta's needs were secured. Its expressed intent is for a 50-year supply for provincial requirements before any export.

Considerable material has been advanced by both Westcoast and Northwest Natural to show that gas reserves are now more than adequate. Alberta Natural's consultant, S. E. Slipper, Calgary, submitted the accompanying table of Alberta gas reserves which he termed "conservative estimates."

ALBERTA GAS RESERVES
(In billion cubic feet)

	Proven and probable	Potential
Milk River sands	....	1,000
Medicine Hat sand	107	636
Blackleaf	1,221	255+
Lower Cretaceous	337	1,038
Carboniferous	2,457	4,000
Devonian	920	209
Total	5,042	7,138

Total proven, probable, and potential, 12,180 billion cubic feet.

"It should be stressed," Slipper said, "that 7,586 M.M.M.c.f. of the estimate is gas which is or will be tied into the production of oil and gasoline. The production of the gas cannot be restricted without restricting the oil production and eventually, as an adjunct to the production of oil, the excess of developed gas over the provincial market requirements will be of such magnitude that, of necessity, it will be either exported or wasted."

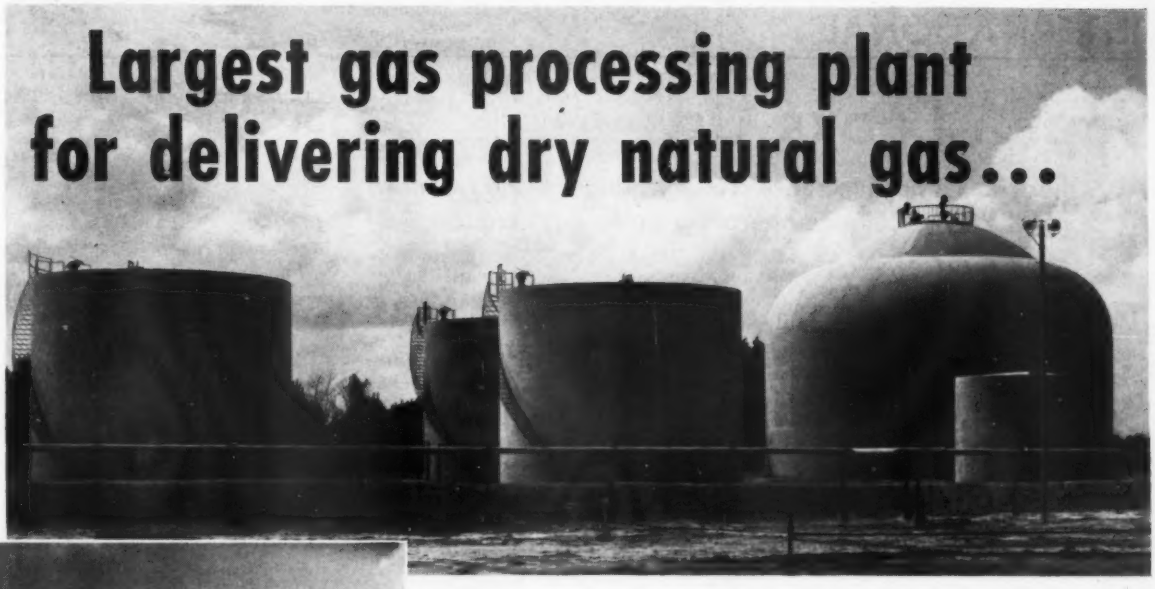
In Westcoast's presentation to the Alberta Conservation Board, Dr. T. A. Link, another Calgary consulting geologist, said the rate of increase in gas reserves over the last year bears out the expectation that within 5 years Alberta will have at least 10 trillion cubic feet in reserve. Dr. John F. Dodge, evaluation engineer, said: "You will have gas running out of your ears in this province. You should be more worried about what you will do with it than how much this or that field will produce."

Alberta Natural, whose southern route carries estimates of higher throughput than the northern line, places its supporting gas reserve requirements at about 2 trillion cubic feet with about 80 billion annual withdrawal.

Unserved area.—The competition for the right to export Alberta gas westward to the Pacific Coast is of particular interest in view of the fact that the Pacific Northwest is the only remaining section of the United States not served by existing or planned natural-gas transmission lines. Whichever company is successful in Canada must later go before the Federal Power Commission in Washington for its United States authorization, but no difficulty is anticipated in this respect.

The three applicants for an Alberta-Pacific Coast line are not all the natural-gas projects being considered by officials in the province. Western Pipe Lines of Winnipeg has proposed a line eastward to that city. Gas reserves in southeastern Alberta are considered sufficient for this project, although it faces the problem of relatively low industrial demand. Another application is from Interfield Gas Lines, Ltd., a Canadian organization which plans the establishment of an Alberta gathering system and the sale of gas to the long-distance transmission lines.

Largest gas processing plant for delivering dry natural gas...



...uses Horton* storage tanks

The Carthage Corporation's new natural gasoline plant at Carthage, Texas, is the largest built so far for the delivery of dehydrated natural gas to transmission pipe lines. It has an absorption capacity of 385,000 M.c.f. daily. At this time, products recovered each day average 40,000 gallons of propane; 75,000 gallons of butanes; 5,500 bbls. of motor fuel; 560 bbls. of kerosene; and 150 bbls. of residuum.

The accompanying views show some of the important storage tanks which we fabricated and erected at this efficient plant. The 5,000-bbl. cone-roof tanks shown above are used for storing naphtha, kerosene, and mineral seal oil; the 20,000-bbl. Hemispheroid at the right in the general view and at the left stores gasoline at 2½ lbs. per sq. in. working pressure; and the 1,000 bbl. cone-roof tank stores residuum.

Special Horton Tank Roofs

In addition to fixed-roof or pressure storage tanks we also fabricate and erect Horton Floating Roofs and Horton Vapordome Roofs. These roofs are used to control losses from flat-bottom tanks storing volatile hydrocarbons.

Write our nearest office for complete information and quotations when you need storage tanks of any type. Please state number of tanks required, capacity, location and diameter and height if special dimensions are required.

*Horton is the trade name used for all products built by the Chicago Bridge & Iron Company.

Some Facts about the Horton* Hemispheroid

The Horton Hemispheroid offers low cost pressure storage for capacities up to 30,000 bbls. at 2½ lbs. pressure and up to 7,500 bbls. at 5 lbs. per sq. in. pressure. It is used primarily for the storage of motor fuel, aviation gasoline, and the less volatile grades of natural gasoline. When storing volatile liquids like these under normal operating conditions, the Hemispheroid reduces filling losses and stops breathing losses.

CHICAGO BRIDGE & IRON COMPANY

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Atlanta, 3.....2154 Healey Bldg.
Birmingham, 1.....1536 North 50th St.
Boston, 10.....1025—201 Devonshire St.
Chicago, 4.....2128 McCormick Bldg.
Cleveland, 15.....2204 Guildhall Bldg.
Detroit, 26.....1514 Lafayette Bldg.
Havana.....402 Abreu Bldg.
Houston, 2.....2119 National Standard Bldg.
Los Angeles, 17.....1523 General Petroleum Bldg.
New York, 6.....3347—165 Broadway Bldg.
Philadelphia, 3.....1615-1700 Walnut Street Bldg.
Salt Lake City, 4.....525 West 17th South St.
San Francisco, 4.....1554—200 Bush St.
Seattle, 1.....1325 Henry Bldg.
Tulsa, 3.....1606 Hunt Bldg.

REPRESENTATIVES AND LICENSEES

Horton Steel Works, Limited, Fort Erie, Ontario, Canada
Ateliers et Chantiers de la Seine Maritime, Paris, France
Constructions Metalliques de Provence, Arles-sur-Rhone, France
Chicago Bridge & Iron Company, Ltd., Apartado 1348, Caracas, Venezuela
Compagnia Tecnica Industrie Petroli, Rome, Italy
Whessoe, Limited, Darlington, England
Motherwell Bridge & Engineering Company, Limited, Motherwell, Scotland
Comprimo N.V., Amsterdam—O, Netherlands

XUM

Japan Looks Up

American methods increase crude production and reserves; rehabilitated refineries operating on foreign crude

Dahl M. Duff

IN both the producing and refining field, the outlook for the petroleum industry in Japan appears to be brighter than at any time since the end of the war.

Mainly as a result of development of new deep zones in Yabase field in Akita Prefecture, crude production this year is expected to show an increase of more than 50 per cent over the 3,748 bbl. daily in 1949. Exploration work has been stepped up, not only for crude but also for natural gas.

Seven of the so-called Pacific Coast refineries in Japan have been rehabilitated and placed in operation. To save foreign exchange, product imports have been curtailed. Plans call for importing and processing about 25,000 bbl. daily of crude in the 1950-51 fiscal year.

The larger Japanese refineries, those located on the coast and operating on imported crude, were closed down shortly after the end of the war as a security and reparations measure. Resumption of operations in certain of these plants was authorized in a directive from the occupation forces last November.

The status of the Japanese coastal refineries is shown in the accompanying table prepared from material made available by officials in the occupation headquarters in Tokyo. Of the 10 refineries listed, 7 are in operation, 2 with cracking units are under repair, and 1 shut down.

In the seven operating refineries, total crude intake capacity is 34,500 bbl. daily. The allowed level of operations, however, provides for running a total of 26,000 bbl. daily. In a later stage of the refining program, it is planned to reduce imports of crude oil as the two refineries operating on cracking stock only are brought into operation. In March, products output of the Pacific Coast refineries was reported at about 13,900 bbl. daily, more than double the February total.

Inland refineries.—In addition to the imported-crude refineries, Japan has a group of seven generally smaller refineries located in the producing areas and processing indigenous production. Capacity of these refineries is about 12,200 bbl. daily, though their runs are far below this figure.

Recent accomplishments and future prospects of Japan in exploration and production have been reviewed by Leo W. Stach, scientific consultant to the Mining and Geology Division of the occupation headquarters, in reports of the Natural Resources Section.

"Operations in 1949 resulted in the first concrete gains after 3 years of effort by the producing industry to regain its former status, against very difficult economic and social circumstances," said Stach. . . . "This year marks the first significant uptrend in production since 1934, a greatly improved reserve situation, increased efficiency in exploration methods and drilling techniques, and a strong revival of morale in the industry.

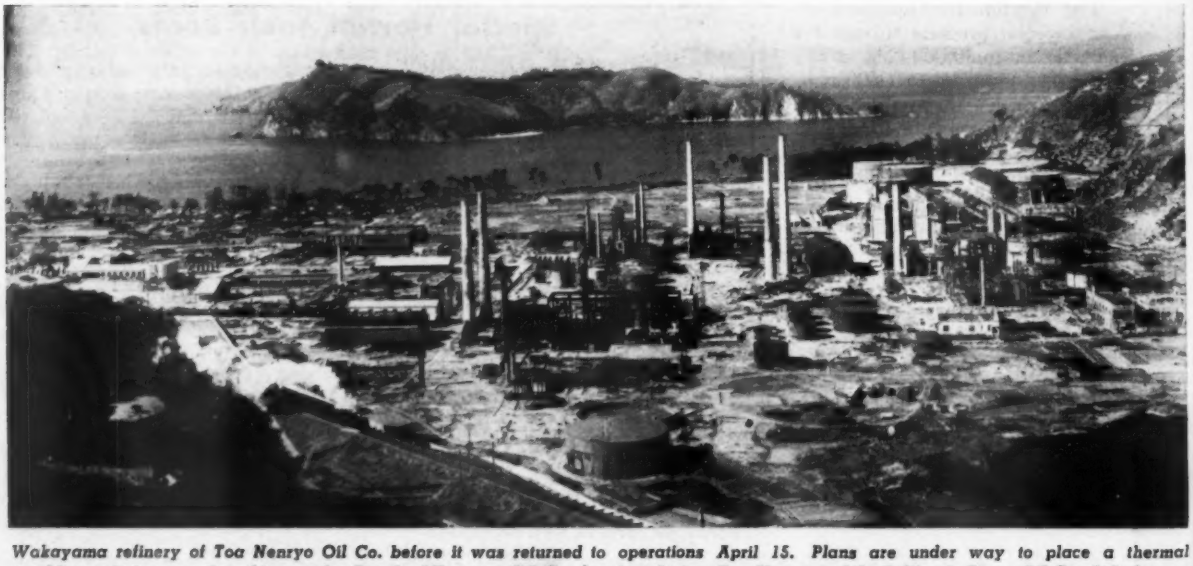
"Although Japan's producing industry supplies only about 10 per cent of the country's requirements, the expected future uptrend in production will make a significant contribution toward balancing Japan's economy by reducing future foreign-exchange expenditures on one of its major essential items of imports."

Completions.—Thirty-four producers

JAPANESE REFINERIES ON THE PACIFIC AND INLAND SEA COASTS
(Figures in barrels daily)

Company and location—	Crude charge capacity	To operate at	Status
Nippon Oil Co.:			
Yokohama	5,000	4,000	Operating
Kudamatsu	5,000	4,000	Operating
Showa Oil Co.:			
Kawasaki	5,000	4,000	Operating
Toa Nenryo Kogyo Oil Co.:			
Shimizu	5,000	4,000	Operating
Wakayama	10,000	6,000	Operating
Maruzen Oil Co.:			
Shimotsu	3,000	3,000	Operating
Matsuyama	1,800	....	Shut down
Koa Oil Co.:			
Marifu	*5,000	....	(§)
Mitsubishi Oil Co.:			
Kawasaki	†5,000	....	(§)
Daikyo Oil Co.:			
Yokkaichi	‡1,500	1,000	Operating

*Cracking capacity, 3,000. †Cracking capacity, 2,500. ‡Lube and asphalt plant. §Under repair, date of operations undetermined.



Wakayama refinery of Toa Nenryo Oil Co. before it was returned to operations April 15. Plans are under way to place a thermal cracking unit in operation this month. Standard-Vacuum Oil Co. has bought into Toa Nenryo, while California-Texas Oil Co., Ltd., has an interest in Nippon Oil Co., and the Shell organization is linked with Showa Oil Co.

DRY OIL

whether you treat hot or cold . . . with *Visco* EMULSION BREAKER Service and Chemicals

● Tough or easy-to-break emulsions...Hot or cold treatment...Large volume or small—Visco Field and Laboratory Service and Visco Chemicals help you produce consistently DRY OIL.

Your Visco Representative has facts and figures on Visco speed and economy that will interest anyone who wants to sell every tank, every time . . .

No matter where you are located, call Houston, CAPITOL 7300, collect, for fast action on your emulsion-breaking problems.

VISCO PRODUCTS COMPANY
INCORPORATED
City National Bank Building
Houston 2, Texas

Visco

CONSISTENTLY EFFICIENT DEHYDRATING AND DESALTING CHEMICALS

NOTICE: Visco Products Company is authorized to manufacture and sell Visco Oil Treating compounds for use in the breaking and resolving of oil emulsions, and to grant licenses for such use, under the following United States patents: 1,899,869; 1,904,049; 1,918,390; 1,937,389; 2,040,899; 2,060,840; 2,094,889; 2,114,780; 2,114,784; 2,188,189; 2,368,414; 2,397,011; 2,416,054; 2,416,055; 2,421,096; 2,458,466. Re. 20,717 and patents pending. Any purchaser of Visco Oil Treating compounds is authorized to use the same in the treating, breaking and resolving of oil emulsions in accordance with the above patents. The royalty for such use is included in the purchase price. Visco Products Company is authorized to and is willing to grant licenses on a royalty basis, to all companies, and to others desiring to practice the patented subject matter, under any and all of the above patents, permitting the user to purchase the oil treating compounds at will from any vendor, and to prepare the compounds for use under the above patent or patents, at a royalty charge of 20 cents per gallon. Application for license should be made to Visco Products Company, Houston, Texas.

XUM

Shimizu refinery of Toa Nenryo Oil Co., formally reopened late in January and operating on imported crude. A dewaxing plant was scheduled to start up in May.

were completed out of a total of 63 wells drilled for a total footage of 149,066 ft. in 1949.

These new wells produced more than 10 per cent of the country's total during the year. As a result of the drilling effort, 6,540,000 bbl. were added to reserves, several times production during the year. On January 1, 1950, Japan's total reserves were estimated at 21,067,000 bbl.

Reserves.—While about 250,000 bbl. of new reserves were proved in Hachimori, Narahashi, Kaji, and Nishiyama fields, the most important discovery was that of deep Zone VIII at about 4,200 ft. in Yabase. Five wells were producing from this zone earlier this year, but a new test in the central section indicated that less than half the full thickness of the zone has been penetrated by the other wells. In addition, the new well showed a Zone XI at 4,600 ft. and Zone X at 5,500 ft.

Some exploration survey projects were dropped as a result of reduced subsidies from the Japanese Government, Stach reported. However, geophysical work was considerably accelerated by the use of two new portable seismic reflection units and two gravity meters from the United States. All previous gravity work in Japan had been done by pendulum survey or by torsion balance.

The increased activity in Japanese exploratory work, while due in part to the settlement of labor trouble hampering operations in 1947 and 1948, was attributable to a major extent to improvements in petroleum-engineering technology. This was made under the guidance of Allied advisers.

New methods.—In this category are new methods which lowered drilling time, reduction of cementing failures, and more careful control of drilling fluid. Efficient cementing was aided by two new skid-mounted cementing units imported from the United States. In a gas well in Niigata, a Japanese contractor used stage cementing for the first time in the country. This procedure had been recommended by petroleum engineers of the Natural Resources Section to combat casing corrosion in the area.

By closer attention to mud control, drilling times were cut to little more than half of that of the previous few years. Several directional wells were satisfactorily completed in Yabase, and gravel packing was successfully applied for the first time in Japan in Narahashi field. Oil-base muds were introduced in Japan, and plans were made for dual completions to produce the new deep zones at Yabase.

With the further import of American engineering technique, it is expected that drilling and production practices will show continued improvement. Water flooding as a secondary recovery measure will probably be attempted in the shallow zones at Yabase. Work along this and other lines was to be observed by a group of Japanese petroleum engineers visiting the United States during the early part of 1950.

Natural gas.—Development of natural-gas production is being encouraged by many local government agencies in Japan to provide domestic and industrial fuel. Last year, dry-gas production in Japan showed a sharp increase to 4,417,000 cu. ft. daily, against 1,286,000 cu. ft. daily in 1948. Stach, however, pointed out much of this gain was due to the fact that many private companies in Niigata gas fields did not previously record their gas output. Production of oil-field gas dropped slightly in 1949 to 2,220,000 cu. ft. daily.

Japan's dominant producing company continues to be Imperial Oil Co., which accounted for 94.5 per cent of last year's output. Steps are now being taken to make this government-owned company a normal private operation and remove it from government control.

Imperial was released from the designation of an excessive concentration of economic power under a law providing for the elimination of such groups. Imperial was removed from the list after it disposed of holdings in associated companies and relinquished leases on which no active work had been undertaken in several years. The law was amended to allow private investors to take all of a new stock issue instead of leaving 50 per cent to the Government as required previously.

Stach said that the eventual place of Imperial Oil within the structure of the Japanese petroleum industry had been the subject of serious consideration over the last 4 years. The technical organization was preserved intact, he said, because of the necessity of maintaining an organization with the financial, technical, and material resources required for intensive oil exploration as recommended by Allied petroleum specialists, one able to rehabilitate the industry as a whole and to save future foreign-exchange expenditures on imported petroleum.

An increase in the price of crude oil to 1,482 yen a barrel ($4.10 a barrel at the official exchange rate) gave considerable encouragement to Imperial as well as the small producers. This coupled with Imperial's increased production and its status as a private enterprise, improved the outlook for the company. However, Stach said, it is not yet in a position to compete directly with imported crude at present prices.

Socony Supplies Japan

Socony-Vacuum Oil Co., Inc., has been awarded a contract to supply 1,932,000 bbl. of crude to the recently reopened imported-oil refineries of Japan.

The contract was made by the United States Armed Services Petroleum Purchasing Agency in Washington and was announced by the occupation headquarters in Tokyo. The crude is expected to come from the Persian Gulf, with the first shipment scheduled to arrive in Yokohama early in August.

Crude from Union Oil Co. off the West Coast was brought into Japan when the so-called Pacific Coast refineries in Japan first resumed operations. Some sterling oil also has been purchased from British suppliers. The Socony contract, to be paid out of United States funds, will meet the anticipated needs of the refineries for slightly less than 3 months.

EUROPE

Royal Dutch Celebrates

The Royal Dutch Petroleum Co., which is coparent with Shell Transport & Trading Co., Ltd., of the Royal Dutch-Shell group of companies, celebrated its sixtieth birthday June 16.

The occasion was celebrated at the company's main offices in The Hague in the Netherlands and also at various company offices, fields, and headquarters throughout the world. At The Hague, the company opened an exhibition, "Sixty Years of the Royal Dutch," in the presence of Dutch government and industry officials.

The Diamond Jubilee celebration also included an international sports festival at The Hague to which all Shell's European companies were invited to send representatives. Among other presentations was a display by the Shell photographic unit.

The Royal Dutch company was established June 16, 1890, to acquire a concession obtained by a Dutch planter from the Sultan of Langkat in northeast Sumatra. The company's original name was Royal Dutch company for the Working of Oil Wells in the Netherlands Indies.

The alliance with Shell Transport & Trading dates from 1902 and originally covered only the Far Eastern trade. In February 1907, the full merger was made, and since that time the group has been developing to its present stature as a world-wide organization employing some 250,000 persons and with production and refining of more than 1,000,000 bbl. daily.

New French Producer

A third producing well has been completed by Soc. des Petroles d'Aquitaine in the new French field in the Lacq area of the Lower Pyrenees.

A report from Paris said the new well is expected to produce 100 tons daily (about 700 bbl.). This would bring total production at Lacq to about 210 tons daily.

World Congress Plans

A committee of honor is now being formed in connection with the Third World Petroleum Congress to be held next year from May 28 to June 6 in the Kurhaus, Scheveningen, in the Netherlands.

The organizing committee of the congress has extended invitations to Dutch statesmen and leading officials in the petroleum industry as well as to prominent international industry figures. The Netherlands Government has acceded to the organizing committee's request to hold the formal opening session of the congress in the Ridderzall (Hall of Knights) in The Hague.

Announcement has been made of four of the speakers who will give lectures during the congress. They are, with their subjects: Prof. J. J. Broeze, Royal Dutch-Shell Laboratory, Delft, "Future Aspects of the Application of Fuels and Lubricants;" Prof. C. Hugel, Institut Francais du Petrole, "Recent Progress in the Chemistry of Petroleum and Its Derivatives;" Dr. C. M. Lees, Anglo-Iranian Oil Co., Ltd., London, "The Oil Fields of the Middle East;" and E. V. Murphree, president, Standard Oil Development Co., New York, "Benefits From Research to the Petroleum Industry."

AFRICA

A section of the East African products pipe line between Mahiwa and Nangana. Photo courtesy of Overseas Food Corp.

Peanuts Pipe Line

Products line serves African nuts project

A 130-MILE, 6-in. products pipe line was built by Shell Petroleum Co. in East Africa in connection with the British Government's project to develop extensive production of groundnuts in this region.

The line is now completed and in service. Tanker-discharge facilities and a terminal were built at Mtwara, and the line laid inland from that point. The line and its related facilities are known at the Mikindani pipe line.

The groundnuts (peanuts) production project involves the use of large quantities of petroleum products, and it was decided to build the line because distribution facilities at the main ports were fully in use and there was neither rail nor adequate road communication with the interior. Shell was appointed agent for the pipe-line project by United Africa Co., managing agents for the over-all program.

A number of problems were encountered with the pipe line, in procurement, landing of equipment, and construction through the remote, tropical country. The 5,000 tons of pipe were obtained in India. Pumps for the station at Mtwara and another some 45 miles inland were equipment that had been used on the wartime India-China pipe line. These were obtained from a salvage firm and reconditioned. Much of the pipe was damaged in transit, and more than 75 per cent of all ends had to be recut and beveled for welding.

The line has a maximum throughput of 30 tons an hour (approximately 6,000 bbl. per day). J. M. Imrie, formerly with Shell in Ecuador, Venezuela, Egypt, and the United Kingdom, was in charge of the project as resident engineer.

Tunisian Area Surveyed

An airborne magnetometer survey covering some 7,750 sq. miles in north-central Tunisia has been completed on behalf of the new Soc. Nord Africaine des Petroles (SNAP) in which Gulf Oil Corp. is interested.

This mixed company of Gulf Exploration Co. and a Tunisian state oil-company subsidiary, and another mixed company in which Royal Dutch-Shell is interested, obtained concessions for exploration in Tunisia March 11.

The magnetic mapping of the SNAP concession area was done in less than 30 days by Aero Service Corp., using a new, high-sensitivity Gulf airborne magnetometer. The data will be compiled in magnetic intensity maps at a 5-gamma contour interval. Studies also will be made of aerial photographs taken during the survey.

A specially outfitted Douglas transport was used in the work. The same plane was used by Aero Service in last year's survey for Gulf in Mo-

XUM

SHELL SERVICING UNIT.—This truck-mounted servicing unit is one of 10 which are being manufactured in the United Kingdom for the Shell Group. Four will be used in Venezuela, and the remainder in Shell's operations in Egypt, Trinidad, and Indonesia. The first unit has been shipped to Cabimas in Western Venezuela. Manufacture of the units in the United Kingdom represented a dollar saving of $250,000 to the British. (Shell copyright photo.)

zambique and in mineral surveys of the Union of South Africa.

Each of the two companies with concessions in Tunisia is required to spend the equivalent of $4,000,000 in development work in a 5-year period. Gulf plans seismic work later this year and may spud in its first test late in 1951.

LATIN AMERICA

French Pipe for Pemex

The Mexican Government is reported to have made arrangements to buy approximately $1,000,000 worth of pipe from France for the Isthmus of Tehuantepec pipe line.

Reports in Mexico City were that the French interests had guaranteed to start delivery in 60 days with payment for the pipe to be in dollars. The deal was arranged through the Mexican Government's Foreign Commerce Bank.

The French pipe would be used to finish the 155-mile 10-in. line which is expected to move up to 30,000 bbl. daily of products from the Minatitlan refinery of Petroleos Mexicanos on the Gulf of Mexico to the port of Salina Cruz on the Pacific Coast.

Pemex engineers and crews built the first 47 miles of the line. The rest is being constructed by two private contractors, Gonzales Ballesteros, S.A., and Cia. Constructora El Aguila, S.A., who built part of the line from Poza Rica field to the new Salamanca refinery.

Mexican officials some time ago made known their intention of meeting some of their materials requirements from abroad. Following out this program, it has also been reported in Mexico City that the government bank has made a barter deal with Western Germany, trading frozen meat for 7,500 tons of well casing.

New Chilean Agency

The Chilean Congress is expected to act favorably in the next few weeks on a measure which would set up a separate government agency to operate the country's indigenous oil industry.

Exploration and development of the production in the Tierra del Fuego region near the Straits of Magellan have been under the Government's Corp. de Fomento which has charge of a number of industrial projects in the country.

The legislation provides for the creation of Empresa Nacional del Petroleo which would operate as a unit and report to the Government through Corp. de Fomento. The proposal has been approved in the Senate and has gone back to the House for further study.

One result anticipated from the change is a streamlining and more efficient operation. The move also would remove the oil operation from limitations on salaries of regular government employes, thus allowing the agency to pay what is necessary for technical personnel.

Oil was discovered in December 1945 in southern Chile, and commercial shipments were begun early this year. The next major step in the program is the construction of a gasoline plant.

New Venezuelan Record

Venezuelan oil production established another new all-time high the week ended June 12, with 1,565,114 bbl. daily.

It was the third consecutive week in which a new producing record was set. In the week of May 29, production went above a million and a half barrels daily for the first time *(The Oil and Gas Journal, June 15, 1950, page 84)*, and the week ended June 5, production was 1,536,680 bbl. daily.

Industry officials still feel that the high production rate will not be sustained and that output will drop back from its present level. However, demand for oil throughout the world appears to be moving sharply upward, accounting for much of the high production rate in Venezuela and also for unofficial reports out of the Middle East that output in that area is setting new records this current month.

Reports from Venezuela show that daily average production of the three major operators the June 12 week was as follows:

	Net production and purchased royalty	Operated production
Creole	698,000	665,566
Shell	115,631	256,549
Mene Grande (Gulf)	534,839	510,233

MIDDLE EAST

Transjordan Plans Refinery

The Government of Transjordan is reported to be studying a plan for the construction of a small refinery to operate on crude from the Trans-Arabian Pipe Line Co. line which crosses the country.

Reports from the Transjordan capital of Amman spoke of a plant of a capacity of up to 200,000 tons annually, or about 4,000 bbl. daily. However, the country's products requirements are only about 90,000 tons annually.

Transjordan's products needs have been trucked in from Beirut and Tripoli in Lebanon since the closing of the Haifa plant of Consolidated Oil Refineries, Ltd., 2 years ago. Provision for furnishing a supply of crude to meet local products requirements have been sought in the Tapline transit agreements.

According to reports of the refinery proposal in Transjordan, 25 per cent of the capital would be taken by the government, 26 per cent by local private capital, and 49 per cent by an unidentified foreign company that would build the plant.

PERSONALS

Steps Up

Gothard now chief chemist for Sinclair Refining Co.

N. J. GOTHARD, assistant chief chemist for Sinclair Refining Co., New York, has been named chief chemist, and will make his headquarters at Harvey, Ill.

Gothard joined the company in 1919 at East Chicago, Ind., as a chemist, and was subsequently appointed assistant chief chemist.

A native of Dundee, Ill., Gothard received his early education in grade and high schools there. He attended the University of Wisconsin, where he graduated with a degree in chemistry in 1914.

Well known in the petroleum industry, Gothard is a member of the American Chemical Society, the American Oil Chemists Society, the Society of Automotive Engineers, and the American Society of Lubrication Engineers.

He has been active in the American Society of Testing Materials, American Petroleum Institute, and National Lubricating Grease Institute Committee work. He also has served as president of the National Association of Insecticide and Disinfectant Manufacturers, Inc.

Dr. Charles F. Weinaug has been advanced from associate professor of petroleum engineering to professor at the University of Kansas' School of Engineering and Architecture, and will serve as chairman of the department. **E. L. Anders, Jr.**, assistant professor of petroleum engineering, has been named associate professor.

J. H. Pollard, for 25 years associated with major sulfur companies in construction, engineering, exploration, and general advisory capacities, has opened offices in Houston as a consultant in that field. He is a graduate of the University of Texas.

F. G. Hawk has been named acting manager of the regional purchasing-stores department of Shell Oil Co., Houston, during absence of **O. D. Story**, who is now on special assignment in New York City. **A. J. Clark**, formerly supervisor of the firm's purchasing-stores in the New Orleans area, will act as assistant manager in Houston.

Roscoe E. Shutt, vice president in charge of exploration for Barnsdall Oil Co., Tulsa, for the past 5½ years, will open offices in Tulsa as a consulting geologist and oil operator. He will be retained as a geological consultant for Sunray Oil Corp.

W. K. Barry, Chickasha, Okla., has resigned as mud engineer for Superior Oil Co. in Kansas and Oklahoma, and is now on an extended vacation.

Theo. A. Link and **Arthur W. Nauss** have formed a partnership as exploration consultants, and have established offices in Toronto, Ont., Canada.

Paul J. Hubbell has been added to the staff of the Division of Engineering and Industrial Extension at the Oklahoma Institute of Technology, A. & M. College, Stillwater, Okla. He formerly served as assistant to the vice president in charge of production, Phillips Petroleum Co.

Paul R. Deputy, consulting geologist and independent oil producer, has transferred his offices from El Dorado to Winfield, Kans.

L. M. Rasmussen, Lyons, Kans., has been transferred to Tulsa by Gulf Oil Corp., where he is undergoing training as a student petroleum engineer.

Ben Powell, formerly tool pusher at Haynesville, La., for Hunt Oil Co., has been transferred to Lubbock, Tex., as scout and landman.

Harold D. Osborn, assistant controller for General Petroleum Corp., Los Angeles, has been elected president of the Petroleum Accountants Society of Los Angeles.

Wesley Mason, an operator supervisor at Phillips Petroleum Co.'s Rice gasoline plant, was recipient of a $500 suggestion award recently, for his method of reclaiming bauxite after use in an isomerization unit.

C. R. Huff, Raymondville, Tex., has been named director of the Texas Independent Producers and Royalty Owners. New members of the executive committee include: **Lou Scherck** of San Angelo, and **Oren Johnson** of Harlingen.

W. L. McKinnon, of the research division of the Shell Oil Co.'s Houston laboratory, has been awarded a certificate of merit for his contribution to industrial accounting literature during the past year in the Lybrand Award competition, the National Association of Cost Accountants announced.

John H. Burns, oil and gas accountant, Alcoa Mining Co., Houston, has been elected president of the Houston chapter, National Association of Cost Accountants.

Carl B. Richardson, Tulsa, has resigned his position as research geologist with Barnsdall Oil Co., and will become a consulting geologist, remaining in Tulsa. Richardson graduated from the University of Missouri in 1926, where he specialized in geology. He spent 8 years in South America in petroleum work. He was then employed for 3 years by Humble Oil & Refining Co. He served 13 years with Barnsdall in the Gulf Coast and Mid-Continent area, specializing in regional problems of exploration. His work included a 3½-year study of Pennsylvanian reefs in West Texas. Richardson, who is credited with having a major part in discovery of Scurry County reef pools, is a member of the American Association of Petroleum Geologists. He delivered a paper on West Texas reefs before A.A.P.G. at its recent annual meeting in Chicago.

N. M. Baird has been appointed assistant manager of the production department, operating division, American Republics Corp., Houston. He was formerly superintendent of the firm's western division. Other changes include: **H. L. Miers**, field superintendent, Hull district, named to replace Baird at San Angelo; **A. L. Beasley**, production foreman, Silsbee district, named to replace Miers; and **R. M. Martin**, night production foreman at Silsbee, named to replace Beasley.

Alfred R. Mullis has been appointed manager of the Gulf Coast district of E. I. du Pont de Nemours & Co., Inc.'s petroleum-chemicals division in Houston. Mullis is a graduate of Rice

XUM

PERSONALS

Institute, and has been with du Pont since 1947.

John E. Pearce has been named assistant regional engineer of the Bayway engineering department of Esso Standard Oil Co.'s Bayway refinery, Linden, N. J. He was succeeded as associate chief engineer in that unit by **Robert J. Finigan. Alvan C. Bidwell** succeeds Finigan as head of the mechanical - engineering group and was in turn succeeded by **A. K. Koehne,** new assistant regional engineer in the mechanical department.

James F. Maple, Standard Oil Co. (Ohio), has been named pipe-line supervisor in charge of the Cleveland-Canton and the Fostoria-Randolph products pipe lines.

William E. Whaley, Esso Standard Oil Co., has been appointed chief plant engineer in charge of the project engineering and maintenance-engineering divisions at the Bayway refinery, Linden, N. J. **Arthur H. Collier** is the new head of the project engineering group and **John D. Meyer** now heads the maintenance-engineering group at the plant. **Edwin L. Bernhart,** now a regional engineer, has been succeeded by **John J. Hoerter,** new chief metal inspector.

Dr. Gustav Egloff, director of research for Universal Oil Products Co., Chicago, is en route to Europe on business, and will visit England, Scotland, France, Germany, and Italy. He will return to the United States August 6.

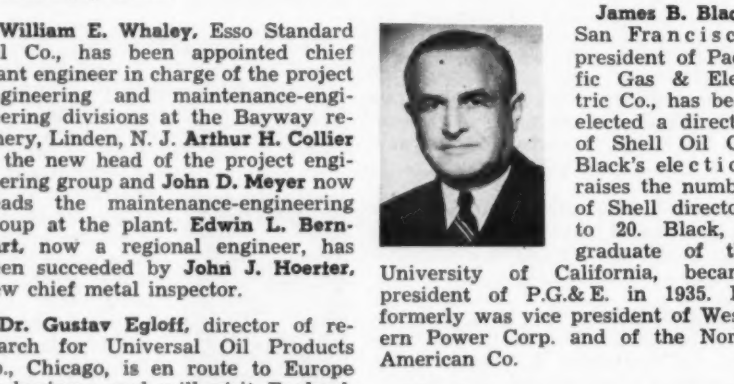
C. C. Benedict, eastern regional operating manager for Socony-Vacuum Oil Co., Inc., New York City, has retired and has been succeeded by **M. M. Beckes,** operating manager of the company's Lubrite division in St. Louis.

Bruce H. Robinson, General Petroleum Corp., Los Angeles, has been elected chairman of the Conservation Committee of California Oil Producers. Others elected include: **Chester F. Dolley,** Atlantic Oil Co., and **D. L. Caldwell,** Barnsdall Oil Co., vice chairmen; and **J. L. Stephens,** Chanslor-Canfield Midway Oil Co., secretary.

Elmer O. Gregory, Oklahoma City, has trasferred to Elmore City, Okla., as field production engineer for the Southwest Antioch Gibson Sand Unit.

James B. Black, San Francisco, president of Pacific Gas & Electric Co., has been elected a director of Shell Oil Co. Black's election raises the number of Shell directors to 20. Black, a graduate of the University of California, became president of P.G.& E. in 1935. He formerly was vice president of Western Power Corp. and of the North American Co.

G. D. Lobley has been named assistant deputy supervisor in the Midland, Tex., office of the Oil and Gas Division, Texas Railroad Commission, replacing **Art Murr,** who resigned recently to enter private business. Lobley is a graduate of Abilene Christian College.

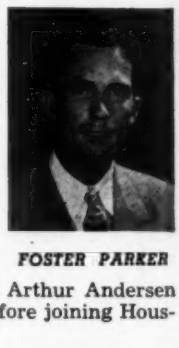


HOUSTON GEOLOGICAL SOCIETY OFFICERS.—New officers of the Houston Geological Society are, left to right: J. A. Wheeler, Fidelity Oil & Royalty Co., treasurer; R. R. Rieke, Schlumberger Well Surveying Corp., president; Jack Colle, consultant, secretary; Frank Reedy, Crown Central Petroleum Corp., vice president; C. W. Carter, Union Oil Co. of California, and J. R. Graham, Skelly Oil Co., members of the advisory committee. Other advisory committee members are William F. Cooke, Jr., Atlantic Refining Co., and Hershal C. Ferguson, consultant.

W. C. MacMILLAN

H. G. SYMONDS

W. C. MacMillan, executive vice president of Continental Oil Co., Ponca City, Okla., and **H. Gardiner Symonds,** president of Tennessee Gas Transmission Co., Houston, have been elected to the board of directors of Continental. MacMillan has been with the company for more than 22 years, joining the firm as an instrument man in the geological department at Shawnee, Okla. Symonds has been president and director of T.G.T. since 1943.



FOSTER PARKER

Foster Parker has been elected treasurer of Houston Oil Co. of Texas, succeeding **H. W. Fairbrother,** who is retiring after 30 years of company service. Parker is a graduate of the University of Texas and was associated with the firm of Arthur Andersen & Co. in Houston before joining Houston Oil.

R. W. McDowell, president, Western Petroleum Refiners Association, will serve as chairman of the executive committee for 1950-51. Other appointments of chairmen of the various committees of the association are: **H. T. Ashton,** Socony-Vacuum Oil Co., St. Louis, finance and membership; **R. H. Wills,** Mid-Continent Petroleum Corp., Tulsa, legal; **W. J. Carthaus,** Deep Rock Oil Corp., Tulsa, manufacturing; **H. W. Camp,** Cities Service Oil Co., Bartlesville, Okla., lubricants; **T. E. Fitzgerald,** Mid-Continent Petroleum Corp., Tulsa, motor fuels; **C. L. Mayhall,** Anderson-Prichard Oil Corp., Oklahoma City, tractor fuel; **C. M. Ridgway,** Pure Oil Co., Chicago, diesel fuel; **James J. Kelly,** Kerr-McGee Oil Industries, Inc., Oklahoma City, asphalt; and **A. R. Bell, Jr.,** Deep Rock Oil Corp., Tulsa, accounting.

Ray V. Hennen, Midland, Tex., has retired as chief geologist for Hiawatha Oil & Gas Co., and has moved to San Antonio. He will continue with the firm on a consulting basis, however. Hennen is credited with having

geological work which resulted in discovery of the Yates field in Pecos County, Texas. He has held the position of director of the geological department for Hiawatha for a number of years, in addition to serving as manager of the West Texas district land department.

Henry Lillja will succeed **H. C. Dennett** as division manager for Humble Oil & Refining Co., at Corpus Christi.

Harold S. Wood has been appointed engineer in charge of the technical-service department of Mid-Continent Petroleum Corp., Tulsa. He formerly served in the technical-service section of the experimental laboratory at the Whiting, Ind., refinery of Standard Oil Co. (Ind.). Wood is a recent graduate of Cornell University.

Frank Johnson, district landman for Sohio Petroleum Co. at Houston, has been transferred to Abilene, assuming the duties of district landman. **Walter M. Wilkinson,** formerly geologist at Wichita, Kans., has been named district geologist in the Abilene district, replacing **Walter W. Brown.** Brown will remain at Abilene as staff geologist.

Don Carroll, former director of production for the Oil and Gas Division, was among numerous Americans who were in Seoul, Korea, during the attack by North Korean Communist forces. Carroll went to that country last year and was later joined by his wife and children.

AT GULF CONFERENCE.—Shown at a recent supervisors' conference held by Gulf Oil Corp. and Gulf Refining Co. at Shreveport, are, left to right: M. E. Brock, assistant to the vice president, Houston; T. R. Bibee, employe-relations manager, Houston division, production and pipe line; Dr. E. H. Powers, division geologist, Houston; E. P. Hubbard, superintendent of production, Houston district; and E. B. Tilley, superintendent of transportation.

Charles A. Hitt, Jr., formerly district landman in West Texas for Hiawatha Oil & Gas Co., has resigned and is now an independent oil operator in Midland, Tex.

SHIFTS

Henry T. Capelle, engineer, Shell Oil Co., Ardmore to Elk City, Okla.; **F. E. Nealon,** engineer, Phillips Oil Co., Okmulgee, Okla., to Woods Cross, Utah; **William H. Mannon,** superintendent, Camay Drilling Co., Compton to Santa Monica, Calif.; **George C. Fraser, III,** engineer, Sun Oil Co., Aspermont to San Angelo, Tex.; **L. K. Grove,** superintendent, Fomac Engineers, Beaumont to Corpus Christi, Tex.; **George M. Mitchell,** engineer, Continental Oil Co., Bowie, Tex., to Ponca City, Okla.; **James D. Keese,** engineer, The Texas Co., Corpus Christi to Coalinga, Calif.; **N. Bruce Calder,** engineer, Gulf Oil Corp., Crane to Goldsmith, Tex.; **H. D. Jordan,** Continental Oil Co., Denver City, Tex., to Eunice, N. M.; **J. H. Loeb,** engineer, Shell Oil Co., Denver City to Kilgore, Tex.; **Ervin L. Laughlin,** engineer, Standard Oil Co. of Texas, Houston to Snyder, Tex.; **G. F. Poe,** superintendent, Ohio Oil Co., Houston to Findlay, Ohio; **Lindell H. Van Dyke,** geologist, Shell Oil Co., Houston to Midland, Tex.; **Tom W. Hassell,** engineer, Lubbock to Midland, Tex.; **Robert R. Shaffer,** engineer, Stanolind Oil & Gas Co., Odessa, Tex., to Pomona, Calif.; **L. H. Jones,** superintendent, Dorris Ballew, Inc., Dequincy, La., to Natchez, Miss.

DEATHS

Richard R. Shinn, 61, general superintendent of General Petroleum Corp.'s production department, died in Los Angeles June 18 from injuries sustained in a traffic accident. He had been with General since 1913, and held various posts in the company's production department. He became general superintendent in 1946, transferring to Los Angeles from the San Joaquin division.

William Leonard Macatee, 64, retired traffic manager of The Texas Co., died June 16 at St. Petersburg, Fla. He had served the company 36 years when he retired 2 years ago.

Edward M. Campbell, 66, Tulsa independent oil operator, died June 25. He formerly owned the E. M. Campbell Pipeline Construction Co.

Edward M. Skeehan, 67, former vice president and treasurer of Barnsdall Oil Co., Tulsa, died in Van Nuys, Calif., June 26. Skeehan was an associate of the late T. N. Barnsdall, founder of the company, and went to work for him in Pittsburgh in 1906 as personal accountant. He became general auditor when Barnsdall Corp. was formed in 1919. Skeehan retired from active service 2 years ago.

Philip M. Polhamus, 53, Wichita, independent oil operator, died June 17.

Robert James Rinehart, 36, assistant division auditor for Dow Chemical Co., Freeport, Tex., died June 12.

Joseph S. Sidwell, 80, Tulsa, former superintendent for Sinclair Oil Co., died June 20. He retired 5 years ago.

Charles B. Harter, 61, Tulsa, welding engineer and owner of H & M Pipe Beveling Machine Co., died June 22.

J. F. Baker, 73, oil operator and financier, died in Wichita Falls June 13.

Jack Morris Bristow, 26, Monahans, Tex., geologist, died June 10.

XUM

GULF COAST LINE.—This new project will deliver additional crude oil to the Houston area from West Texas. Photo above shows the new 18-in. line crossing the Pedernales River near Austin. Workmen are making final welds before lowering the line into the ditch. At right is route map showing locations of the three pumping stations.

52 Miles Saved, Capacity Nearly Trebled on

Humble's New 370-Mile 18-In. Oil Pipe Line

by Leigh S. McCaslin, Jr.
District Editor

HUMBLE PIPE LINE CO.'s new 370-mile 18-in. crude line to the Houston-Gulf Coast area, from West Texas, delivered its first crude this month.

The line cuts 52 miles off Humble's old route between the two points. In addition, when three pump stations have been installed, it can deliver a maximum of 135,000 bbl. of oil daily, nearly three times as much as the old system.

In the past, oil has been moved by Humble from West Texas to the Houston area through a system of smaller-diameter lines that "just grew" as new fields were discovered. The first of these was an 8-in. line that started at Kemper and tied in to the existing north-south line at Comyn, in north-central Texas. On this first line, four pump stations were built about 45 miles apart. Later, as West Texas production increased, a second 8-in. line was laid parallel to the first, and four intermediate pump stations were added to increase capacity.

According to the company, the growth of the system in this manner led to inefficiency and top-heavy operating costs. In the face of these rising costs, increased postwar competition, and the need for additional capacity, a change was needed.

The new line is expected to reduce operating costs and place Humble in a better competitive position with other carriers by virtue of (1) a shorter route—52 miles less than the old system, (2) larger pipe to carry more oil, and (3) fewer pump stations.

Humble's new line was built in two sections. Morrison Brothers Construction Co. had the contract for the 178-mile western section, and Anderson Brothers Corp. did the work on the 192-mile eastern section. Morrison kept one spread in the field while Anderson Brothers had two spreads. Morrison started clearing right-of-way on December 13, 1949, and began stringing pipe on January 14, 1950. Anderson started work about a month later. The delay on the eastern section was caused by late pipe deliveries.

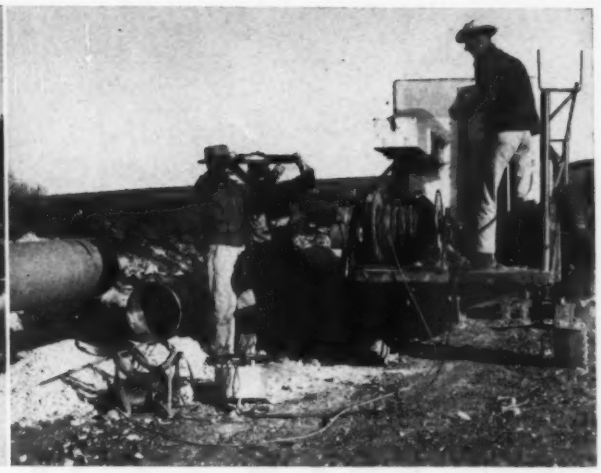
Special Construction and Equipment

An interesting equipment note was the use of special four and six-unit gang drill rigs to drill shot hole for explosive charges. On the western section of the line, double jointing was employed. Two of the 40-ft. joints of pipe were welded into 80-ft. sections before being trucked to the route of the line. Short-wave radio-telephones were used during construction to keep field offices in touch with the working crews at all times.

The finished line will have one of the first microwave radio communications systems to be installed for pipe-line use. This system initially will provide eight voice circuits and a combination of teletype, telegraph, and telemeter circuits. Operating at the very high frequency of 7,000 megacycles, the microwave equipment can readily be expanded to handle 32 voice channels. Thus, any additional volume of communications in the future can be taken care of.

The Humble microwave installation will be made by Philco Corp. The installation is to consist of terminal stations at Houston and Kemper, and 18 automatic relay repeaters or "boosters" along the 370-mile route. It will represent the longest microwave radio relay yet installed in Texas.

In announcing the award of contract for the Humble installation, Philco predicted that such radio systems, employing many radar princi-



Left: Road crossing is made by Humble's line under U. S. Highway 290 between Austin and Johnson City. Contractor for this section of the line was Anderson Brothers Corp. Right: X-ray experts check a film of the welds of the line.

ples, "may eventually replace overhead wires for long-distance telephone and telegraph communications."

Connecting Pipe Lines

Pan American Pipe Line Co. is building 80 miles of 10-in. line from the southern part of Scurry County, Texas, to connect with Humble's old line between Kemper and San Angelo. This crude will probably flow into the Housto narea. Humble plans to build a line from Runnels County which will connect into the old system at Ballinger. This crude will probably be directed to the Houston area through the old main pipe line.

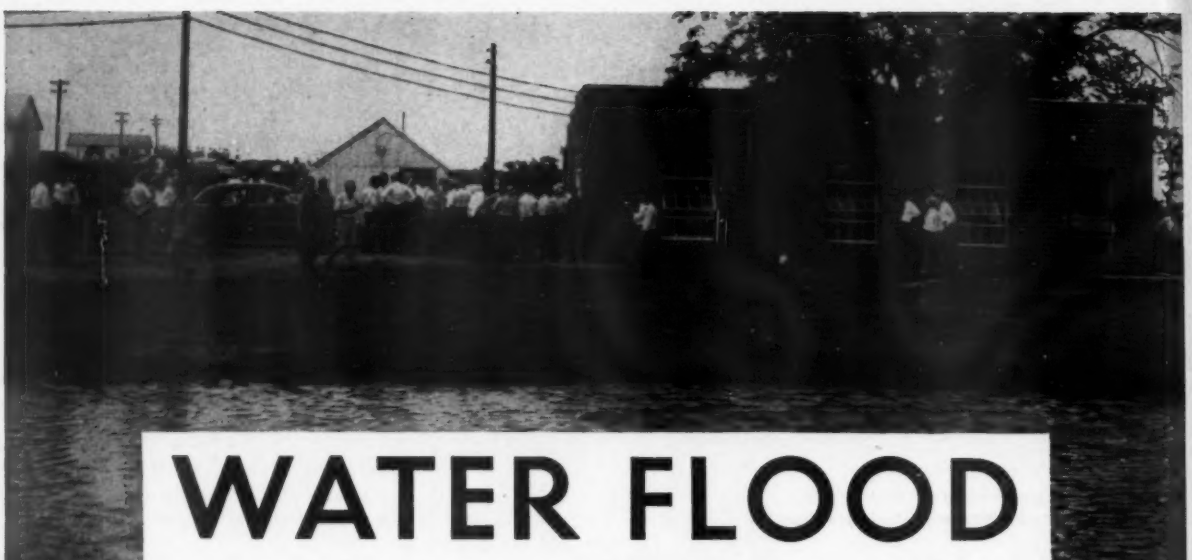
Construction has been authorized for one of three new pumping stations which are scheduled for the new line. However, a contract has not been awarded. The station will be located at Eckart. The other two proposed stations will be located at Fort McKavett and at Warda. It is planned to install two 1,000-hp. electric-motor-driven centrifugal pumps at each of the three stations. Another 500-hp. unit will be added to each station later to obtain the maximum line throughput of 135,000 bbl. daily.

Initially, Humble's existing pump station at Kemper is keeping the new line supplied with crude. This station has a total of 3,300 hp. of permanently installed pumping units and 600 hp. of portable equipment. The Kemper station pumps through Humble's line to Corpus Christi, in addition to the new Kemper-Houston artery.

Construction on the eastern section of the new crude line was under the supervision of A. E. Payne, Humble's division superintendent in Houston. The western section was handled by F. D. McMahon, division superintendent for the company in Midland.

Left: A four-unit gang drill rig is used to drill shot holes for explosive charges. This picture was taken on the 178-mile western section of the line which was laid by Morrison Brothers Construction Co. Right: Pipe covered with a special barite coating is readied for launching across a small stream.

XUM



WATER FLOOD

This is water-flood pressure plant No. 2 on the 1,020-acre Lynde, Walter & Darby operation; one of the reserve water supply ponds in foreground. Plant contains four electrically driven triplex pumps and four parallel-connected pressure filters. Capacity is 11,000 bbl. per day. Output water pressure to injection wells is 800 psi.

in Neosho County, Kansas—Oldest systematic project in Humbolt-Chanute field, as conducted by Lynde, Walter & Darby

by J. C. Joers,* P. Grandone,* and D. B. Taliaferro*

THE Lynde, Walter & Darby waterflooding project just east of Chanute, in the eastern half of 27s-18e, Neosho County, Kansas, is the oldest systematic water flood in Humboldt-Chanute field. It was started on the Kaney and Ingraham leases late in 1937. The operation was limited to these leases until 1941, but in that year the development was extended to other leases and continued at a moderate rate until 1945, when the project included 266 acres.

Since 1945, development has continued at an accelerated pace. More than 180 acres were developed during 1949, and the entire project included about 1,020 acres on January 1, 1950. Fig. 1 shows the extent of the project.

*Petroleum Experiment Station, U. S. Bureau of Mines, Bartlesville. Report prepared as part of annual inspection tour of properties, Kansas-Oklahoma Water - Flood Operators Group.

Partial view of the gravel-lined water settling ponds, adjacent to No. 2 water pressure plant. Steel building housing chemical feeding equipment is on bank, out of sight to the right.

Production is from the Bartlesville sand, the top of which ranges in depth from 715 ft. in wells on the south end of the project to 765 ft. in wells near the north end. These variations are the result largely of differences in surface elevation. Other production included in the flood is from a stray shoestring sand at a depth of 690 ft.

The sand runs southeast and northwest across the main producing horizon at almost right angles to it. Core analyses show the Bartlesville sand to have an average porosity of about 20 per cent in this area. The average net thickness is between 25 and 30 ft. The permeability of the Bartlesville sand varies widely but averages about 50 md.

The "stray" sand, running from the south edge of Section 14 to the north edge of Section 15, mentioned above (Fig. 1), is exceptionally permeable. Numerous core samples from this sand have been found to have permeabilities of more than 1,200 md.

The oil has an average gravity of 31° A.P.I. Numerous cores taken during the development for water flood-

ing showed that the oil and water saturation of the sand varied widely from one part of the property to another and frequently from well to well.

Early History of Leases

Leases in the Lynde, Walter & Darby flood were included in the early development of Humboldt - Chanute field, which started in 1898. The original development of these leases was completed by 1910. Although the decline in the rate of oil production from most wells in the field was gradual, many of the properties were abandoned before stimulative production methods came into use. Later, some of these leases were redeveloped, and it is reported that in some areas the water - flood development represents the third redrilling.

Many of the old wells were improperly plugged, and they have been a constant and frequently a perplexing problem. As the location of most of the old abandoned holes is unknown, it usually is impossible to find them until water breaks out through them to the surface after pressure has been applied. Even then, it is often necessary to clear away several feet of earth with a bulldozer before the exact location can be found. In one area, eight old wells were found within 300 ft. of a new well.

About 1915, when the application of vacuum came into wide use in northeastern Oklahoma, vacuum plants were installed on the leases included in this project and were kept in operation for more than 20 years until water flooding was started in 1937.

Air injection was not used extensively, but during 1929 and 1930 there were two or three air-injection wells on the Ingraham lease and the same number on the Kaney lease. Two wells were equipped for air injection on the Russel unit (see Fig. 1), but whether they were ever used for this purpose is not known.

As with most leases in the older Kansas fields, early production records are completely lacking. Neither the amount of oil recovered by primary production methods nor the effect of vacuum or air injection on the rate of oil production is known.

Source and Treatment of Injection Water

Fresh water from the Neosho River, which runs through the property, and brine produced with the oil are used for flooding. Two water plants—one at each end of the flood—having a total daily capacity of 22,500 bbl., feed water into a single system of lines to the water-injection wells at plant pressures of 800 psi. The size of the plants will permit some additional development. An average of about 20,000 bbl. of water per day was injected during April 1950.

The No. 1 plant on the Kaney lease has been in operation since the proj-

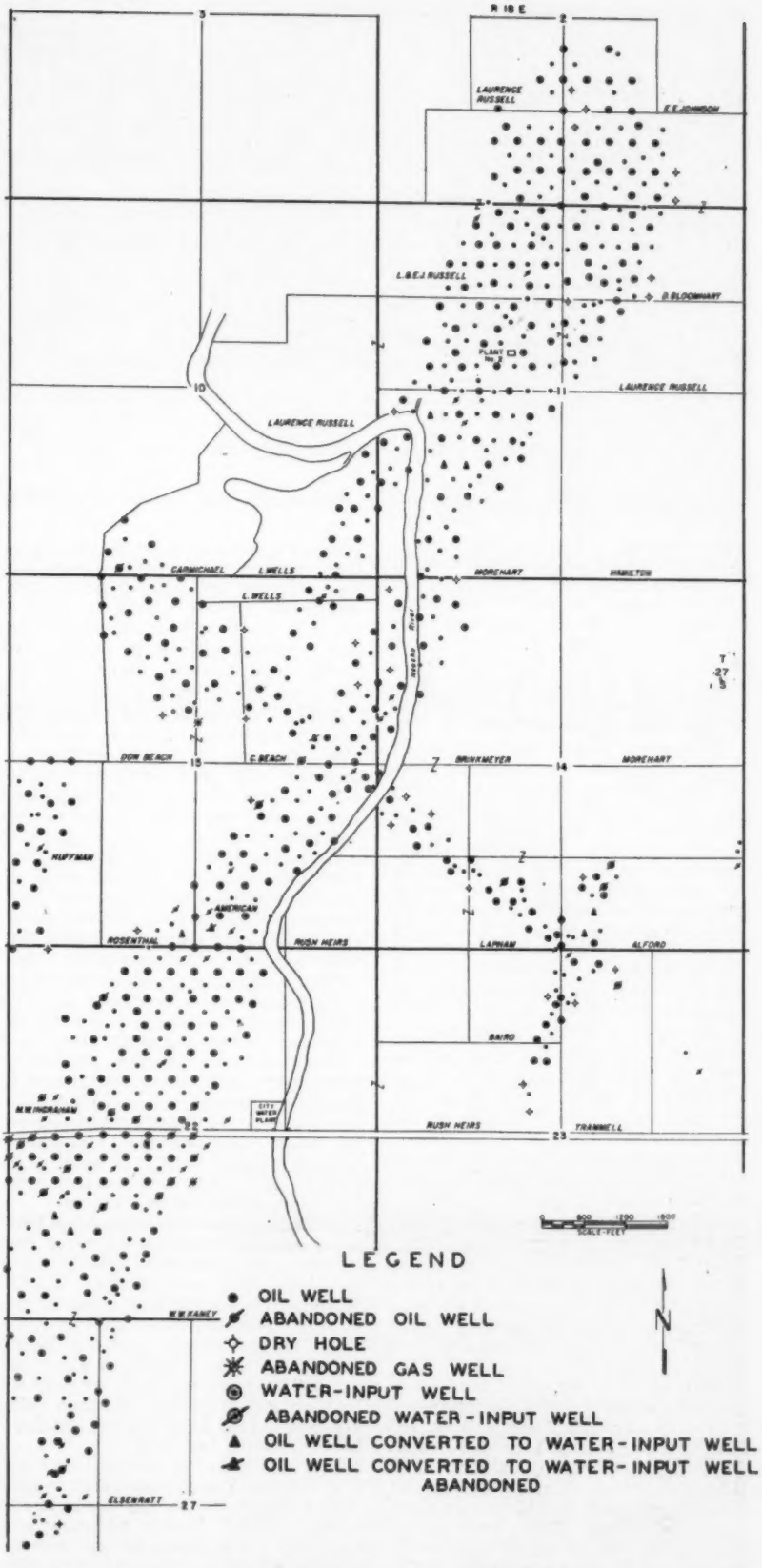


Fig. 1—Map of Lynde, Walter & Darby water-flooding project.

XUM

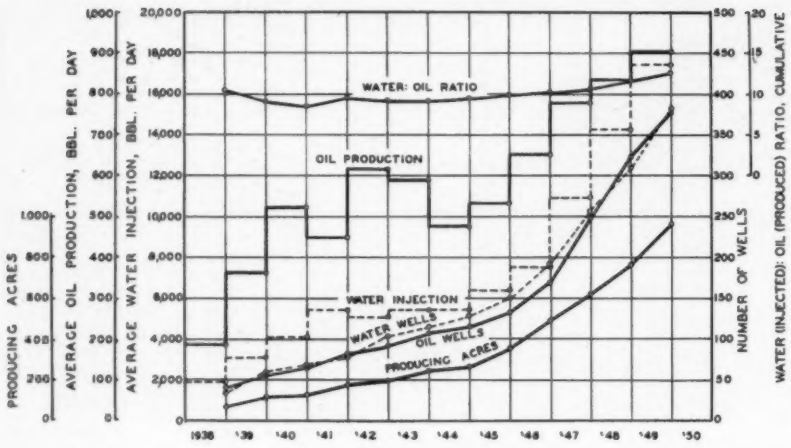


Fig. 2—Production history of Lynde, Walter & Darby water-flooding project.

ect was started. Both the return water and the river water enter this plant through a wooden flume, 75 ft. long, containing riffles. The necessary chemicals are added as the water enters the flume. During the first week of April 1950, this plant handled 9,000 bbl. of water daily, to which 50 to 60 lb. of hydrated lime, 200 lb. of alum, 15 lb. of liquid chlorine, 2 lb. of ammonium sulfate, and 5 lb. of copper sulfate were added.

The water passes from the flume into an earthen pit equipped with earthen baffles to prevent channeling and to insure adequate reacting time. The water flows by gravity from the reaction pit into a concrete settling pit, from which it is picked up by a centrifugal pump and forced through three pressure-type sand filters connected in parallel, and thence into a 500-bbl. clear-well tank. Finally, the water in the clear-well tank is pumped into the injection lines by three triplex pumps, each of which is driven by a 50-hp. gas engine.

Because of the low stage of the river in April 1950, raw river water entering the plant had a pH of 8.3, but the water produced with the oil is slightly acid. The pH of the treated water ranged from 7.6 to 7.8. The retention time of water in this plant is approximately 3 days.

The No. 2 plant, on the Russell lease, was put into operation in October 1945. The design and operation of this plant is similar to that of the No. 1 plant, but it has a slightly larger capacity and was handling 11,000 bbl. of water daily during the first week of April 1950.

This plant is equipped with four pressure filters connected in parallel, two of which use Anthrafilt as the filtering medium and two use sand. Four triplex pumping units are employed, three of which are high-speed Worthington pumps and one an older type Aldrich unit. The Worthington pumps are each powered with a 75-hp. electric motor and a 60-hp. motor drives the Aldrich pump.

Development and Operation of Flood

Most of the project has been developed on a fairly regular five-spot pattern, although the pattern has not been rigidly maintained where the shoestring is very narrow or where unusual conditions of oil saturation make variations from the pattern desirable. The spacing between like wells are 330 to 440 ft. apart (Fig. 1).

Most of the old wells were plugged, and the entire acreage was redrilled, although some of the old wells were retained and used temporarily. To the end of 1949, a total of 235 old wells had been plugged and abandoned.

Extensive coring was done in the development of the project, particularly since 1941. Both input and producing wells are shot. Where cores are available to serve as a guide, the wells are shot selectively with maximum charges of 5 qt. of nitroglycerin per foot. Where fracturing of the sand is not necessary, a 1-in. shell is used to clean the sand face.

Originally, all of the producing wells were equipped to be pumped. However, during 1942 and 1943, the flowing of production from wells on the Kaney lease was tried and found successful. Accordingly, from 1944 to 1946 all producing wells in the project were converted to flowing.

All new wells completed since 1945 were equipped to flow from the beginning. The operator reports that individual lease records show a 30 to 40 per cent decrease in the rate of oil production immediately after conversion from pumping to flowing. However, after approximately a year, the production rate was back to the extrapolated pumping - production rate, and a half year later the lost production had been regained.

In addition to the saving in lifting cost, flowing has eliminated all emulsion trouble. While the wells were being pumped, it was necessary to treat the oil, winter and summer. A greater ultimate recovery from the properties by flowing is indicated, because the reduced operating cost will result in a much longer economic lift.

Initially, when the producing wells were pumped, they were equipped with casing, but no casing is used now in either the producing or injection wells. Two-inch cement-lined tubing is used in the producing wells to control corrosion, as the formation water is highly corrosive. By control of the pH of the injection water, the corrosiveness of the water is minimized, and cement-lined tubing is not used or needed in the injection wells.

In both injection and producing wells the tubing is run with a rag packer, which is set by lowering it into the shot hole and then pulling it up against the top of the shot hole. A bucketful of crushed rock is placed on top of the packer, and the rock is followed by about 10 sacks of cement. The annulus between the tubing and the walls of the hole is filled with benonitic mud from the top of the cement to the surface to prevent external corrosion of the tubing.

All water-injection wells completed since the middle of 1949 are equipped with a ¾-in. wash string, which is run inside the tubing to about 2 ft. from the bottom of the hole. It has been found that the sand face can be cleaned far more thoroughly by injecting water at a high velocity through this wash string than by depending on the back flow of the well. Each well so equipped is washed out daily during the first month of operation and occasionally thereafter. It is reported that the performance of wells equipped in this manner has been noticeably better than that of wells not equipped with wash strings.

The procedure for abandoning wells no longer useful in the operation of the flood is to set an eccentric packer in the 2-in. tubing opposite the cement plug and cover it with one sack of cement. After the cement has set, the tubing is shot off and pulled.

Results of Water Flooding

Fig. 2 shows graphically the average daily rate of oil production and the average daily rate of water injection for each year from the start of the project through 1949. The cumulative water-oil ratio, the number of active injection and producing wells, and the productive area at the end of each year also are shown in this figure. It will be noted that at the end of 1949 there were 967 acres in the project on which there were 381 active oil wells and 382 active water-injection wells.

There is a slight inaccuracy in the curves showing the number of active producing and injection wells, as before 1947 no record was kept of the number of old wells in use. For the period before 1947, these curves represent the number of new wells in

(Continued on page 86)

Left: Steel building built by General Petroleum Corp. to store current material and spare parts for drilling rig. House has bails at each top corner for lifting with motor crane when moving. Right: Compartment at end of hind section where spare pump rods are kept in individual retainers and pockets on floor to protect from damage to surface and threaded ends.

Portable "Supply Store" for Drilling Rigs

GENERAL PETROLEUM CORP.'S drilling department provides a portable, all-steel "supply store" to follow a drilling rig where practically all necessary spare equipment is kept in separate bins and drawers, readily available in usable condition when replacements are necessary.

The building has a skid-type foundation, made of pipe, so the structure can easily be placed in the desired position when unloaded from a truck near the location. Steel tank plate is used for the floor, roof, ends, and full-opening doors which form the sides. All seams are welded and edges reinforced with angle iron. At each of the four top corners are 1-in. steel loops, or bails, into which bridles can be hooked for lifting the building with a motor crane or a boom and winch-equipped oil-field truck.

The interior is equipped with various sized bins and compartments, some of which are fitted with doors which can be locked, so the many types of supplies can be kept separated. At one end of a group of bins is a compartment the full height of the building for storing shafts and other long equipment. Several pockets are welded to the floor and lined with belting to cushion the weight of pump piston rods and to prevent damage to threaded ends. The piston rods are kept in an upright position by steel loops, or rings welded to the partition walls so the polished surfaces will not be nicked by striking other heavy objects.

Largest bins, or compartments, are placed on the floor so pump liners and chain hoists can be stored so as to prevent the building from being top heavy, which could affect hauling. Other bins are designed to receive packing in original cartons, and complete pistons are available for instant use.

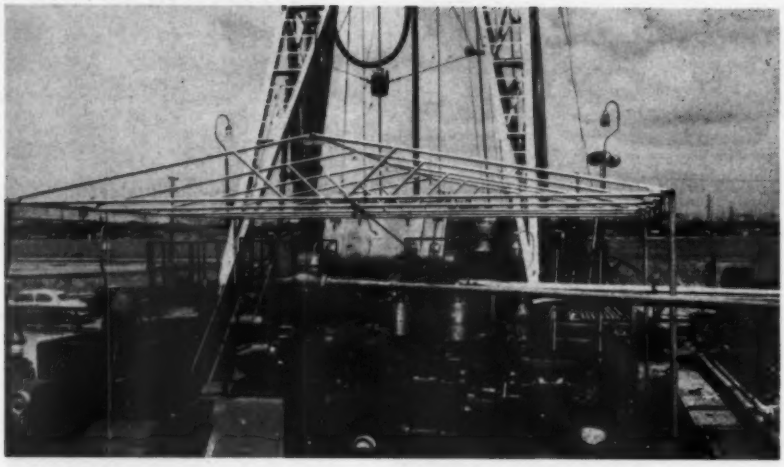
As the building is equipped with a center wall, dividing the various compartments and bins, none of the receiving drawers and storage spaces are so deep that parts cannot be readily obtained without removing one part to pick up another. The parts and supplies most frequently required are stored in the bins and drawers on the side of the building facing the drilling rig, while pipe nipples and valves seldom required are stored in the opposite side of the supply store.

A steel work bench is attached to one end of the building with the flat working surface bound with angle iron; holes are cut for attaching a heavy all-purpose vise. The bench is supported with diagonal braces welded to its outer edge and to the ends of the skid members upon which the building is placed.

When the drilling rig is shut down for moving, both sides of the building can be closed and locked to prevent loss of equipment.

Right: Opposite side of General Petroleum's tool building, showing locked compartments for more valuable spare parts.

XUM



Rotary drilling rig of Fred M. Manning, operating in East Los Angelss field for Richfield Oil Corp., showing complete canopy frame ready for the tarpaulin cover.

Canopy Frame for Drilling Rig

FRED M. MANNING, drilling contractor of Denver, and with many operating points throughout the country, working his first string of rotary tools in California on a Richfield well in East Los Angeles field, has developed a sturdy, quickly assembled frame for a canopyy over the mechanical equipment at the rig. This type of housing for equipment is supplanting the conventional 2 by 4 timber frame because the tarpaulin can be stripped from the frame in minutes.

The fire-proof frame can be rigged up or torn down without wrenches or special tools with no depreciation due to nail splits, or punctures of corrugated sheet roofing.

The frame requires only four corner posts to support the five roof trusses and the eave plates. These posts are made of 3-in. pipe equipped with broad, flat plates for ground footing. Anchors to attach the assembled frame to the drilling rig substructure are supplied as sliding sleeves on the posts adjacent to the rig. These sleeves can be easily spotted to match the top sill of the substructure where they are tack-welded to the metal when erected, and easily detached by washing out the welded bead with no damage to either the substructure or the sleeves on these posts.

Sleeve on corner post adjacent to rig substructure, to anchor the canopy frame to the floor sills by welding.

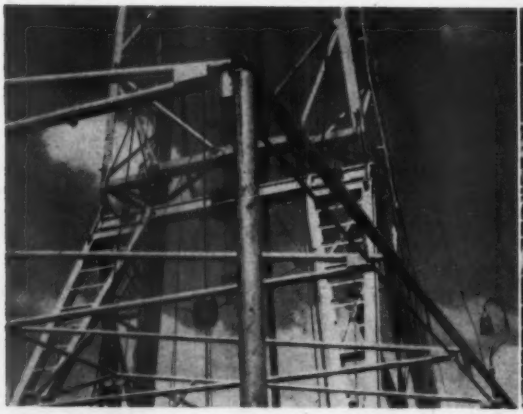
Eave plates are made of a single joint of 2-in. pipe reinforced with a ⅞-in. sucker rod. This member somewhat resembles a long-span deck truss with spacer bars between the 2-in. pipe and the rod below.

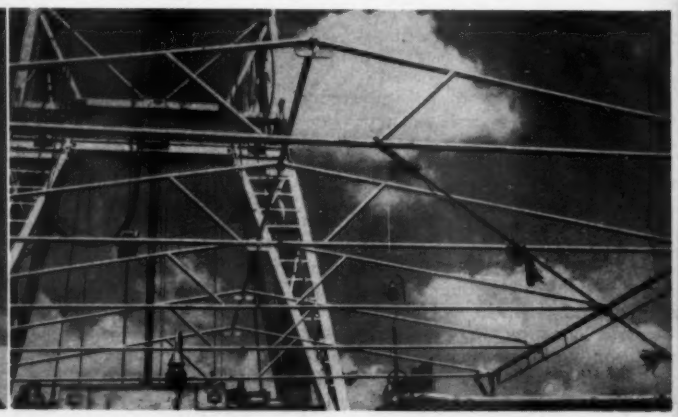
Roof trusses are made of 2-in. pipe also, using a single joint for the horizontal member and two sloping rafters supported by two diagonal struts. The joint where the rafter ends join the horizontal member is reinforced, after welding, with a metal plate on either side securely welded to both pieces of pipe. The top ends of the companion rafters are separated approximately 2 in. and are joined to each other with a flat piece of steel inserted in slots cut into the lower side of the pipe.

Roof-truss ends are finished with a right-angled stub nipple which slips into sockets attached to the eave bar instead of employing hinges or bolts for this purpose. The ridge pole is a single joint of 2-in. pipe which fits into the recesses at the top of each roof truss, secured in place by notched plates matching the inserted plates which join the rafters.

The method of construction ties the entire roof assembly together so as to prevent slipping after rigging up. All roof trusses are identical and require no numbering for position. The eave bars are also identical and can be used on either side so long as the roof-truss attaching sockets are on the inside. End posts are interchangeable, excepting that the two with anchor sleeves must be used at the rig side.

Left: The corner post and tie-in construction does not require bolts or special erect or tear down. Right: Roof trusses in place, showing diagonal struts and method of placing ridgepole between ends of adjoining rafters.





XUM

XUM

The HAPPY Company Announces . . .

NOW for the FIRST time they are

Designing and Building

IN THE OIL CAPITAL OF THE WORLD

AIR (FIN-TYPE) COOLING

Specifically for the OIL and GAS Industry . . .

YOU'LL FIND HAPPY AIR COOLING OFFERS:

- BETTER QUALITY
- BETTER ENGINEERING
- QUICK DELIVERY
- LOWER COSTS
- ABILITY TO HANDLE SPECIAL JOBS
- SINGLE RESPONSIBILITY FOR DESIGN & MANUFACTURE

The HAPPY COMPANY

Formerly HAPPY BELTING COMPANY

TULSA, OKLAHOMA

SERVING FOR . . .

BWH Industrial Hose
Happy Coolers
Rubber Belting
Leather Belting
Bull Dog V-Belts
Sure-Grip Sheaves
P & H Engine Starters
Safety Switches
Happy Pumping Units
Power Transmission Equipment

31 HAPPY YEARS

BRANCH STORES:

Seminole ..... Oklahoma
Smackover ..... Arkansas
Odessa ..... Texas
Salem ..... Illinois
Ellinwood ..... Kansas

DISTRICT REPRESENTATIVES:

Kilgore ..... Texas
Wichita Falls ..... Texas
Wichita ..... Kansas

XUM

CENTRIFUGAL COMPRESSORS

on the Texas Eastern Transmission Corp. system

by E. A. Koenig*

IN the design of a natural-gas pipeline system, the volume of gas handled, load factor, spacing between stations, line-pack requirements, fuel used in operation, cost of operation and maintenance, cost of construction, all involve a process of calculating the best or most economical arrangement that should govern the design. Often, however, this design would or could become inadequate before the proposed system is completed. Future expansion should be incorporated into the design plans where possible.

In designing the Texas Eastern Transmission Corp. system, the engineering department began with a daily rate of 142 million cubic feet. This was the pipe-line-delivery capacity without compressor stations. A systematic expansion followed, first adding one centrifugal and one reciprocating station. This was the use of the first centrifugal compressor to go into continuous main-line operation, pumping gas at 550 psi. suction and 670 psi. discharge pressure, and began in October 1947. During November 1947 the rate of throughput was over 200 million cubic feet per day with these two stations. In April 1948 we had seven centrifugal stations and three reciprocating stations running, with a capacity of 340 million cubic feet per day.

Today we have 16 centrifugal compressor stations, all of which are electric-motor driven, directly connected to 3,600-r.p.m. electric motors. These vary in sizes, ranging from 1,250 to 2,000 hp. each, making a total of 188,500 hp. in the 16 stations. There are, also, 10 reciprocating stations, with a total of 88,900 hp. for these stations. This gives a total of 277,400 hp. in stations pumping gas, with a system capacity of 740 million cubic feet per day.

*Texas Eastern Transmission Corp., Shreveport. Paper presented at annual meeting of Natural Gasoline Association, Fort Worth.

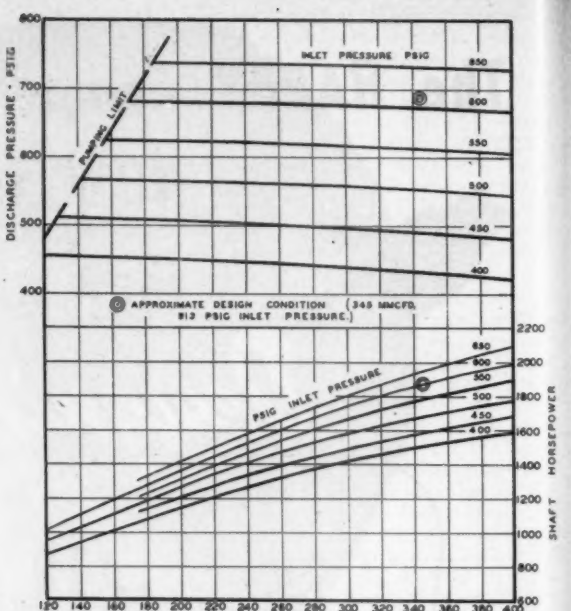

DISCHARGE PRESSURE - PSIG
INLET PRESSURE PSIG
PUMPING LIMIT
APPROXIMATE DESIGN CONDITION (348 MMCFD, 812 PSIG INLET PRESSURE.)
PSIG INLET PRESSURE
SHAFT HORSEPOWER
CAPACITY - MMCFD (15.025 PSIA & 60 °F)

Fig. 1—Pressure-volume-power data for centrifugal compressor unit 3,570 r.p.m. (Inlet flange, 16 in.; discharge flange, 14 in.). Pressures at suction and discharge flanges does not include valves or piping. Inlet temperature = 60° F. Natural-gas specific gravity = 0.615, n value = 1.30.

Dependability of electrically driven centrifugal stations is answered in this way. We have 107 centrifugal compressors of which number we have many machines that are running with 99 or 100 per cent on-the-line time month after month, with loads on individual machines of well over 100 per cent. Also, we have machines that have not been off of the line for repairs of any nature, but which are given routine inspections.

One station has required only 4½ gal. of oil for a total of 2,049 unit hours in one month. The total oil used on our system by centrifugal compressors in one month is only 869 gal. for 56,253 machine unit hours. It seems reasonable to expect a maximum of 500 to 600 gal. in total oil consumption when running 107 centrifugal or 181,000 hp. in a month's time.

Repairs of centrifugal compressors also are relatively simple inasmuch

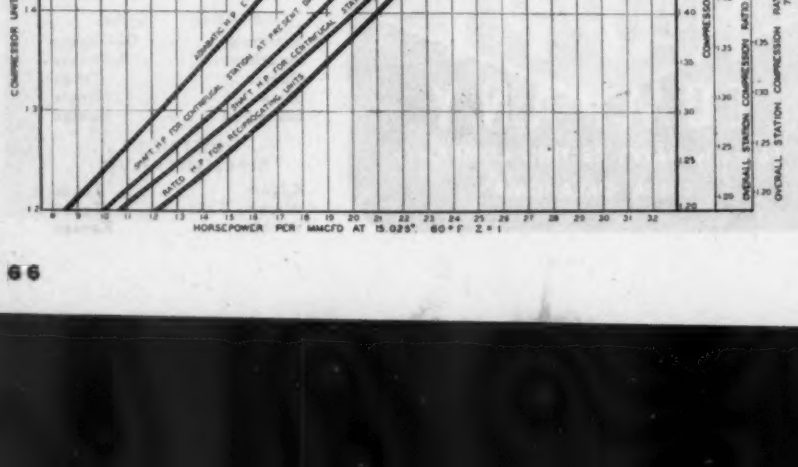

COMPRESSOR UNIT COMPRESSION RATIO
COMPRESSOR UNIT COMPRESSION RATIO
OVERALL STATION COMPRESSION RATIO (SUCTION 750 PSIG HEAD GATE TO DISCHARGE HEAD GATE)
OVERALL STATION COMPRESSION RATIO (SUCTION 600 PSIG HEAD GATE TO DISCHARGE HEAD GATE)
HORSEPOWER PER MMCFD AT 15.025°, 60° F. Z = 1
SHAFT H.P. FOR CENTRIFUGAL STATION AT PRESENT DAY BEST PERFORMANCE - E = 840
SHAFT H.P. FOR CENTRIFUGAL STATION AT AVERAGE PERFORMANCE E = 732
SHAFT H.P. FOR RECIPROCATING UNITS
RATED H.P. FOR RECIPROCATING UNITS
RATED H.P. FOR ACTUAL PERFORMANCE OF RECIPROCATING STATION E = 824

Fig. 2—Horsepower data for compressors.

Hp required = (Hp./M.M.c.f.d. at 15.025 psig. 60° F. Z = 1) T/S20 × Z

T = Suction temperature, °F. absolute.

Z = Approximately compressibility factor at suction conditions.

M.M.c.f.d. = Million standard cubic feet compressed per day.

E = Product of mechanical efficiency and compression efficiency expressed as a fraction.

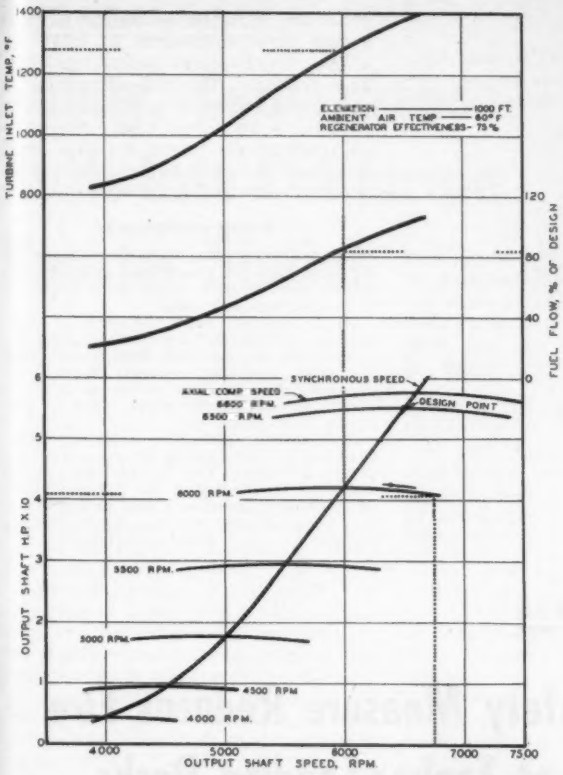
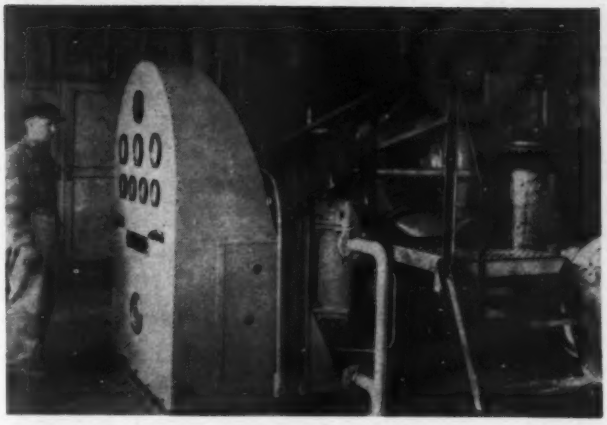


Fig. 3—Left: Estimated performance of gas-turbine unit (Clark Brothers Co., Inc.).



Typical picture of Ingersoll-Rand end-section centrifugal compressor at Station 19, Sarahsville, Ohio.

as the unit can be completely overhauled in a single day with four men.

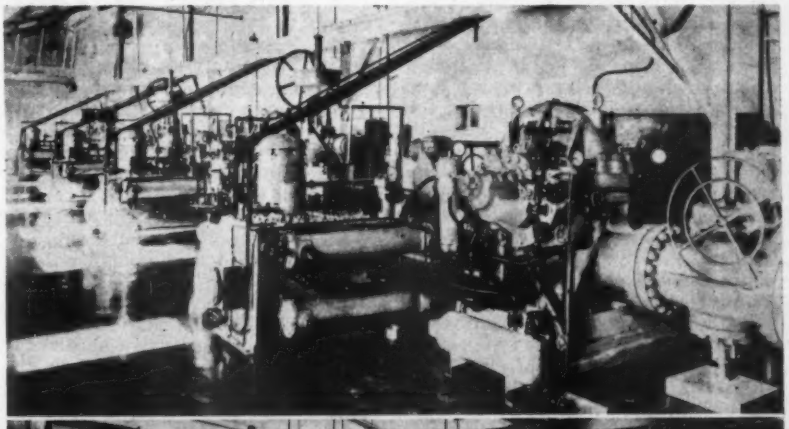
The accompanying curves are based on the performance that we are actually experiencing today and are arranged to give a comparison between the operation of reciprocating and centrifugal machines. The reciprocating machinery data are based upon the same type and make of engine.

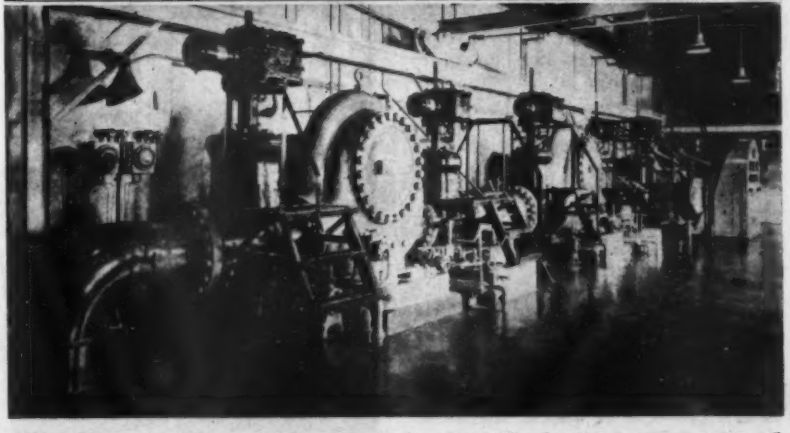
In discussion of the centrifugal compressor, Fig. 1, "Pressure-Volume-Power," represents a design for 345 M.M.c.f. per day. The upper left-hand margin is "Discharge Pressure" (psig.) and a sloped dashed line ("Pumping Limit"). To the right of the Pumping Limit are the suction-pressure curves corresponding to capacity at the bottom of the graph and the resulting discharge pressure at the upper left. For example, with 613-psig. suction and 687-psig. discharge pressure, capacity, is 345 M.M.c.f. per day.

In the lower part of Fig. 1 are suction-pressure curves, and in the right-hand margin, shaft horsepower. At 613 psig. suction and 345 M.M.c.f. per day, approximately 1,870 hp. would be required. We would, no doubt, choose for this condition a 3,600-r.p.m. motor of 2,000 hp. capable of 10 or 15 per cent overload continuous rating.

To the left of the pumping limit slope line, it would not be advisable or practical to operate, neither at 120 M.M.c.f. per day and about 475 psig. discharge, nor at 190 M.M.c.f. per day and approximately 737 psig. discharge. This is because it is below the designed capacity of the machine at a constant speed of 3,570 r.p.m. However, with a variable speed drive, it would be possible to vary the head and volumes over a wider range than with a constant speed drive.

When a constant-speed drive is used, such as an electric-motor drive, the volume can be varied from approximately 180 M.M.c.f. per day to capacity, 343 M.M.c.f. per day, or beyond design to 420 M.M.c.f. per day,





Above: Views of split-case double-suction de Laval centrifugal compressors at Station 17, Circleville, Ohio. Below: Views of end-section of Clark centrifugal compressors at Station 19, Sarahsville, Ohio.

or more, if the shafts and motor will take the additional load. Allowance could be made for this in the compressor shaft and motor overload in the design of the station. So, it would be possible to go from about 50 per cent capacity to 100 per cent capacity and as far beyond 100 per cent capacity as practical—at least 110 to 115 per cent, if the design allowed for such conditions at constant speeds. This range in capacity could well accomplish everything desired of the pipe line and station design in capacity requirements.

In Fig. 2, "Horsepower Per M.M.c.f. Per Day at 15.025 Psig., 60° F., Z = 1" the left-hand margin refers to compressor "unit compression ratio." The bottom of Fig. 2 refers to "horsepower per M.M.c.f. per day at the stated condition, uncorrected for compressibility." To obtain the true horsepower required per M.M.c.f. per day compressed, the reading on the lower scale must be corrected for compressibiliay and temperature as shown in the equation.

The right-hand margin of Fig. 2 gives "compressor unit ratio" on the first scale; "over-all station compression ratio" (suction head gate to discharge head gate) at 1,000 psig. discharge pressure, allowing 5 psig. pressure drop on each side of the compressor, in the second or middle scale; "over-all station compression ratio" (suction head gate to discharge head gate) 750 psig. discharge pressure, also allowing 5 psig. pressure drop on each side of the compressor, on the third scale. Beginning with the left-hand curve, is represented adiabatic horsepower, E (compressor efficiency) = 100 per cent, theoretically. The next curve to the right represents "shaft horsepower for centrifugal station at present day best performance," with product of mechanical and compression efficiency, which includes allowance for pressure drop through piping and valves between stages of compression, E = 0.851. The next short curve near the top gives rated "horsepower for actual performance of reciprocating station," E = 0.824. The next curve to the right gives "shaft horsepower for centrifugal station at average performance," E = 0.792. The next curve or bottom curve gives "rated horsepower for reciprocating units."

Explanation of Performance Chart

Fig. 3 shows an estimated performance of gas-turbine unit and can best be explained in the following manner:

1. Assume operation with a power output of 4,080 b.hp. at an output shaft speed of 5,950 r.p.m. This corresponds to a synchronous speed condition. The fuel flow, from the curve, is 81.3 per cent of that at the design condition. The thermal efficiency at this point may be calculated from the following:

Thermal efficiency

$$= \frac{\text{b.hp.}}{5{,}500} \times \frac{\text{Design thermal eff.}}{\text{\% of design fuel flow}}$$

$$= \frac{4{,}080}{5{,}500} \times \frac{28}{0.813}$$

$$= 25.2 \text{ per cent}$$

If thermal efficiency of 28 per cent at the design condition is assumed, although somewhat higher values are anticipated, the corresponding thermal efficiency is 25.2 per cent, with a turbine inlet temperature of 1,270° F.

2. Assume operation with a power output of 4,080 b.hp. at an output shaft speed of 6,750 r.p.m. The corresponding axial flow compressor speed is 6,000 r.p.m. Because of slight changes in component efficiency at other than the synchronous speed condition, it is necessary to provide a fuel flow equivalent to 4,220 hp. at the synchronous speed condition. The resultant thermal efficiency at this speed condition is 24.75 per cent, or 0.45 points lower than obtainable at synchronous speed for the same power output. The turbine inlet temperature required is 1,280° F.

Acknowledgments

The following acknowledgments are made for assistance on this paper, and for the achievement of good operation as displayed by actual pipe-line data:

W. E. Worley, superintendent of compressor stations, and his staff of personnel and those in the field that have made the good operating records. From their operating experience a wealth of data has been accumulated which was used in preparing this paper.

Also, for the assistance of B. D. Goodrich and C. W. Marvin in preparing the curves and data. This is also true of the assistance received from the manufacturers of equipment, namely, Clark Brothers Co., Inc., Cooper-Bessemer Corp., DeLaval Steam Turbine Co., and Ingersoll-Rand Co.

OPERATING IDEAS

Simple Safety Measure Reduces Fire Hazard at Tanker-Loading Docks

A SIMPLE safety measure providing displacement of light petroleum products with carbon dioxide in tanker loading lines, greatly reduces fire hazard at eight Gulf Coast docks operated by Magnolia Petroleum Co. Each dock is equipped with a rack of three 100-lb. CO_2 cylinders and a 40-ft., ¾-in. line which will couple to nipples installed in all required loading line headers.

On completion of loading, the CO_2 line is coupled behind the closed dock valve and the block valve aboard the tanker is reduced. On opening the cylinder valve, the 8-in. loading line which may range from 40 to 45 ft. in length, is completely purged in a very few seconds. Use of sparkproof tools and sparkproof alloy flanges on all loading hoses further promotes safety.

Carbon dioxide purging is a required practice on all lines handling crude oil, kerosine, and lighter products. In addition to the four docks so equipped at the company's Beaumont refinery, similar installations are used at two docks at Magpetco and two at Corpus Christi.

OPERATING IDEAS

Safety, Convenience Built Into California Booster Station

MANY useful devices can be incorporated into the original layout of a plant or they can be installed as needed after its completion.

An example of the former is the recently constructed Shell Oil Co. gasoline plant—booster station in Ventura Avenue oil field in Southern California. Here many ideas are carried out to enable plant operators to work with safety and dispatch.

1. Truck ramp. — To expedite the changing of heavy parts, such as pistons, cylinders, flywheels and the like, the engine room was designed so that a loaded truck may be driven directly into the building. The ramp was built culvert-like so service piping which parallels the foundation of the building is cleared. Replacement parts are lifted from the truck by traveling crane for disposition without excess handling.

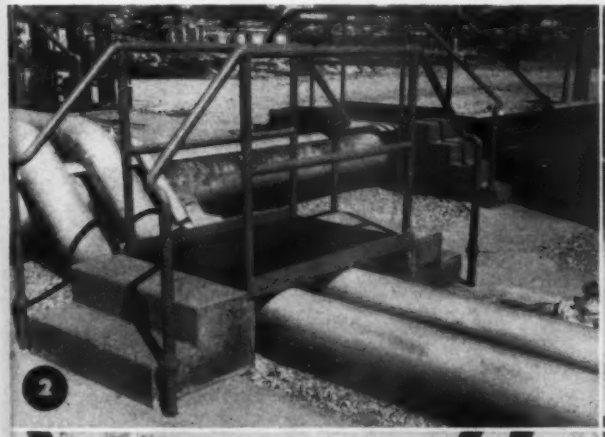
2. Removable walkways. — As all process and service piping is installed above ground level for corrosion control, stiles for passing over the pipe lines were built for safety and convenience. The steps leading up to the crossovers were made of concrete with flat treads and vertical risers so that the heel of a shoe will not be caught by overhanging or projecting parts.

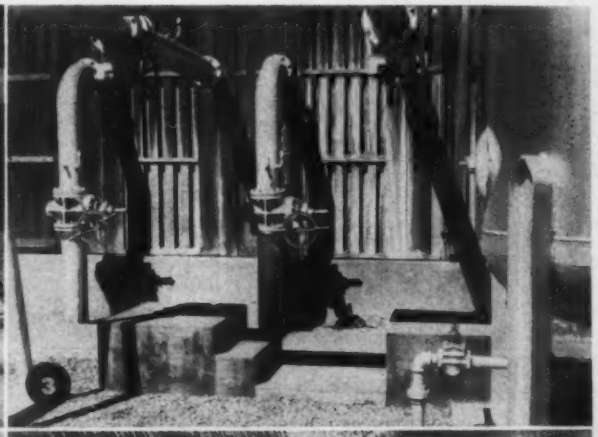
The crossovers were tailor made for the particular location and constructed entirely of steel. Since these stiles pass over piping, provisions were made for their removal when painting or servicing should become necessary. Pipe nipples imbedded in the concrete approach walks are connected to the handrail posts with lip unions. Recesses in the edge of the concrete steps provide supports for the crossover walk.

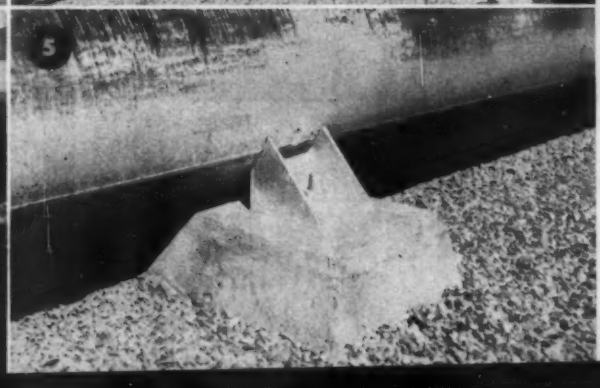
3. Concrete platforms.—Worm-and-sector-operated plug valves installed in the piping entering the atmospheric cooling tower were of necessity placed higher than convenient to be reached from ground level by an operator. In order that the use of improvised aids might be eliminated, such as packing cases or unsafe stepladders, concrete steps were installed directly beneath the handwheels of these valves. The approaches to these steps are extensions of the concrete walk running beside the various units where such elevated valves were installed.

4. Access stairway.—Where suction and discharge lines from compressors leave the building to be connected to the gas headers with control valves on the outside of the building, each adjacent pair of lines may be reached by convenient steps. A concrete landing pad is installed between the operating valves. These valves were placed with their handwheels facing each other so that two lines can be controlled from a common point.

5. Header support.—Concrete piers placed for supports at adequate intervals are made with knife-edge bearings to minimize contact area between pipe and piers as a means of combating corrosion. These knife-edge supports are in the form of twin triangles, made of substantial steel plate. Foundation bolts set into the piers anchor these supports to prevent movement. Ends of the triangular pieces of metal, cut to match the contour of the piping, provide a narrow surface area so the lines can expand and contract without binding.







XUM

IF you're still in the dark about **NEW**

INTERNATIONAL TRUCKS

CHECK THESE FACTS:—

1. Every new International Truck—from the smallest to the largest—is **heavy-duty engineered** to save you money, with the traditional stamina that has kept Internationals first in heavy-duty truck sales for 18 straight years.
2. Every new International Truck gives you the Comfo-Vision Cab, "the roomiest cab on the road."
3. There's a new International Truck that's *right* for your job in this all-new line . . . the world's most complete line of trucks.

But get *all* the facts—see your nearest International Truck Dealer or Branch, *soon*.

International Harvester Builds McCormick Farm Equipment and Farmall Tractors... Motor Trucks Industrial Power... Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars" NBC, Sunday afternoons

ALL NEW, ALL PROVED

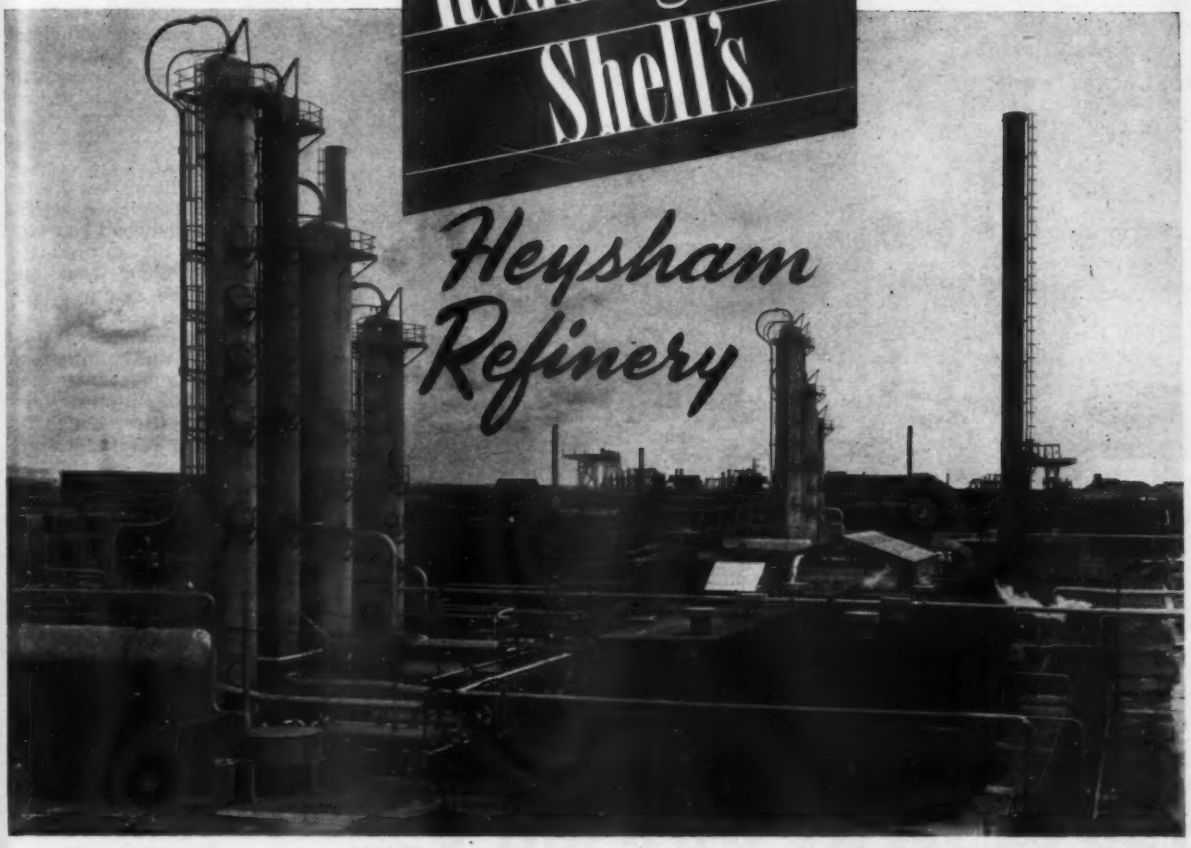
INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY CHICAGO

by

V. S. Swaminathan*

Redesigning Shell's Heysham Refinery



To meet increased need for petroleum products in England, Shell began reconstruction of the Heysham refinery at Cheshire, England, in 1948. This plant originally was constructed as a wartime operation in 1939 by Trinidad Leaseholds, Imperial Chemical Industries, Ltd., and Shell. Picture shows fractionating equipment of No. 3 unit on the left; the compressor house, center foreground; fractionating equipment of No. 2 unit, middle center; I.C.I. works in background.

DURING the war the Trimpell refinery at Heysham, Cheshire, England, was operated jointly by Trinidad Leaseholds, Imperial Chemical Industries, Ltd., and Shell Refining & Marketing Co., Ltd. On behalf of the British Government, 100-octane aviation fuel was produced from a gas-oil feed stock by high-pressure catalytic hydrogenation. After the emergency, the oil plants at Heysham were idle until the beginning of 1948.

The units which had been employed for processing the hydrogenated gas oil were purchased in February 1948 by Shell. They were redesigned and modified for conventional processing of crude oil at an annual throughput of 1,500,000 long tons to help bridge the gap between demand for petroleum products and shortage of refinery capacity. This changeover entailed an enormous amount of work, involving transfer of much equipment from one plant to another, coupled with the reorganization of storage and distribution facilities to handle a daily volume of oil three times as great as that for which these facilities were initially designed.

*5 Fielding Road, Bedford Park, W.4, London.

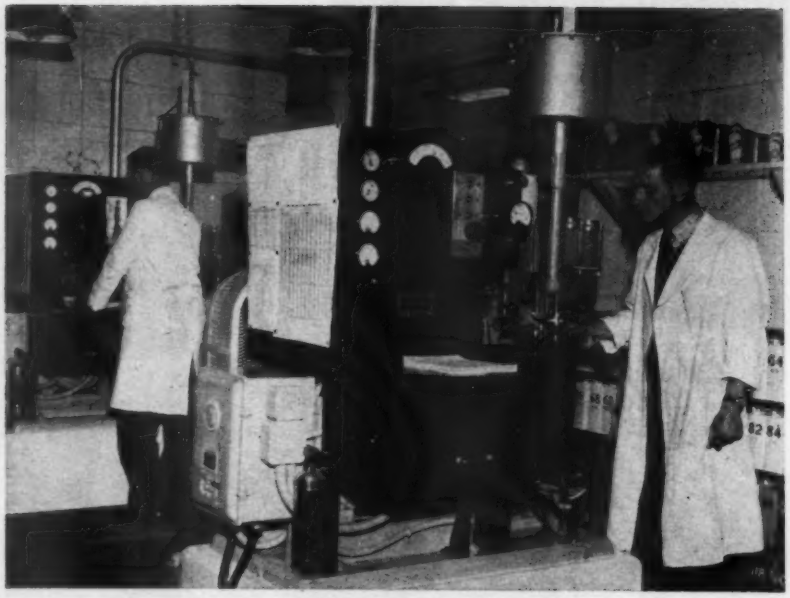
Original wartime plant.—Construction of this Heysham refinery was begun in September 1939 and operations started in August 1941. From that date aviation gasoline was in continuous production until V.E. Day. Thereafter the demand for aviation gasoline declined rapidly, but the factory continued to manufacture ammonia, required for fertilizers, and motor gasoline in place of aviation fuel. This was an expensive process for producing motor gasoline, and, after the cessation of lend-lease, became entirely uneconomic.

Heysham, as originally constructed and operated, employed the following process for aviation-fuel production. Gas oil from America was stored in subterranean tanks and transferred as needed to the refinery where it underwent preliminary redistillation. Hydrogen was prepared by water-gas reaction, carbon monoxide being catalytically converted to more hydrogen with additional steam. Final traces of carbon monoxide were removed by ammoniacal copper liquor after compression at 350 atm.

Hydrogenation of the gas oil was effected in two stages, i.e., (1) removal of nitrogen compounds like ammonia, which poison the catalyst used in (2) the hydrogenation reaction proper. A synthetic crude oil containing everything from methane up to practically unchanged gas oil was obtained. It was distilled to yield propane and lighter hydrocarbons used as fuel gas, propane which was bottled, butane aviation base stock, and a residual fraction which was recycled for further hydrogenation.

The segregated butane was processed for the production of mixed isooctanes by dehydrogenation to butylenes which were polymerized to mixed isooctylenes. The isooctanes were obtained therefrom by a final

XUM



Engine testing laboratory at Heysham refinery.

hydrogenation using the hydrogen produced in the dehydrogenation stage. High-octane aviation gasoline was later blended from the base stock, isooctane TEL, and other additives.

Revamping of Refinery

The Heysham plant was thus designed for a very special and rather unusual purpose, but there was equipment such as heaters, distillation columns, condensers, heat exchangers, and pumps on the gas-oil, and light-oil (synthetic crude) distillation plants and the isooctane units. The new project was to arrange these units and equipment together to make them suitable for crude-oil distillation.

A. W. W. Kirby is general manager of Heysham refinery, Shell Refining & Marketing Co., Ltd.

During the purchase negotiations the government insisted that the plant be used in such a way as to give the highest possible throughput, and that operations should start in the shortest possible time.

In the first 30 days 5 miles of new pipe line were laid, and 15 miles of existing pipe line were modified, apart from modifying the tanks and distillation columns, building a new boiler battery, installation of new pumps, and a multiplicity of instrument and electrical alterations.

The first unit was in fact started up 5 weeks after the work was begun, and the entire refinery, at its scheduled throughput of 1,500,000 tons per year, in 4 months.

Kuwait Crude Is Charged

From the outset it was proposed that Heysham should process crude from Kuwait oil field. This crude is paraffinic-asphaltic mixed base crude, having properties as shown below:

APPROXIMATE PROPERTIES OF KUWAIT CRUDE

Sp. gr. at 60°/60° F.	0.866
Viscosity, Redwood 1 at 100° F., sec.	52
Sulfur, per cent wt.	2.4
R.v.p. at 100° F.	10.1
Pour point, °F.	<0
Asphaltenes, per cent wt.	1.0
Distillation A.S.T.M.:	
I.b.p., °C.	38
5 per cent vol. rec. at °C.	84
10 per cent vol. rec. at °C.	117
20 per cent vol. rec. at °C.	173
30 per cent vol. rec. at °C.	230
40 per cent vol. rec. at °C.	287
Vol. recovered at 300° F., per cent	43
Vol. residue, per cent	56
Vol. loss, per cent	1.0

In the early stages of redesigning the plant a simple process was decided upon for several reasons. To operate in the shortest possible time, simplification of the actual revamping was vital. Moreover, Heysham lacked equipment for the chemical refining of intermediate cuts such as kerosine. It was therefore decided to produce only three products—motor gasoline, gas oil, and fuel oil. Of these only the gasoline called for chemical treatment, and facilities existed for its treatment by caustic soda and sodium hypochlorite to give a doctor-sweet product.

It was decided to cut deeper into the crude than would be necessary for making a straightrun residue to meet a maximum viscosity specification of 950 seconds Redwood 1 at 100° F. Part of the gas oil so produced was then used to blend back the heavy residue to the required viscosity.

It was decided to combine the two gas-oil distillation units into one crude unit (No. 1) and to use each of the two light-oil distillation units as a separate plant (Nos. 2 and 3). Each of these units was to produce unstabilized gasoline, gas oil, and fuel oil. The unstabilized gasoline was to be run down to common storage, and stabilized in a column No. 3 unit, together with all rich gas collected from the vapor spaces of crude-storage tanks and from the condensing systems of the main crude columns of all three units.

On No. 1 there was provision for the stripping of its own gas-oil production, but the gas oil produced by both Nos. 2 and 3 units was all to be stripped with a column of No. 2 unit. In the case of all three units, the heavy residue stream was to be cut back with some of the gas oil produced on the unit before running down to storage. The three units were thus to be interdependent to a large extent. The general flow scheme is shown in the accompanying diagram.

The two original gas-oil distillation units were converted into No. 1 crude-distillation unit. In the redesigned unit the vacuum column of the north unit was employed as the main crude-distillation column. The atmospheric column of the same equipment was used as a fuel-oil stripper, and an additional column was fabricated and installed for stripping a gas-oil sidestream taken from the main column. The capacity of the fractionating equipment was adequate for the throughput required, but the tube still proved too small for its new job; therefore the tube still of the south unit was used in parallel with that of the other unit.

The original feed tanks and feed pumps were used, but an additional feed pump taken from the other unit was put into service as it was necessary to have two operating with one spare.

The redesigned distillation units Nos. 2 and 3 were originally the two light-oil distillation units for fractionating the vapor-phase crude pro-

(Continued on page 76)

THE FAMOUS

M.I.W.

DRAW WORKS and PRODUCTION HOIST

IS BACK AGAIN

- **SPLIT DRUM SHAFT (Patent Pending)**
- **TORQUE CONVERTER**
- **AIR OPERATED FRICTION CLUTCHES**

P36S for servicing to 6000′.

P36SR for servicing to 8000′ and drilling to 2500′ with 3½″ drill pipe. Equipped with Hydromatic Brake.

Units bearing "R" suffix are equipped with reverse for speedy return of traveling block.

P42S for servicing to 8000′.

P42SR for servicing to 11,000′ and drilling to 4000′ with 3½″ drill pipe. Equipped with Hydromatic Brake.

"SR" series may be equipped with rotary table sprocket.

Write for Bulletin No. 849.

Manufactured and Sold Direct by

MUSKOGEE IRON WORKS

MAIN OFFICE AND PLANT — **MUSKOGEE, OKLAHOMA**

XUM

NEW REMOTE-CONTROL RIG

Employs separate rotary and cathead drive units

by Roy F. Carlson
Dallas District Editor

The driller at his remote-control console panel. The rig is fully air-operated, enabling him to control all throttles, clutches and drives, and brakes from this post well off the derrick floor.

A NEW easily assembled and highly portable power rig designed for medium-deep drilling recently completed its fourth well in Brownlee field of Southwest Texas by Buzzini Drilling Co., of San Antonio.

Outstanding features of the rig, in addition to that of mobility, include fully air-operated controls including brake; use of an independent rotary and catshaft drive unit; and low engine substructures which permit the draw works to be placed below the level of the derrick floor.

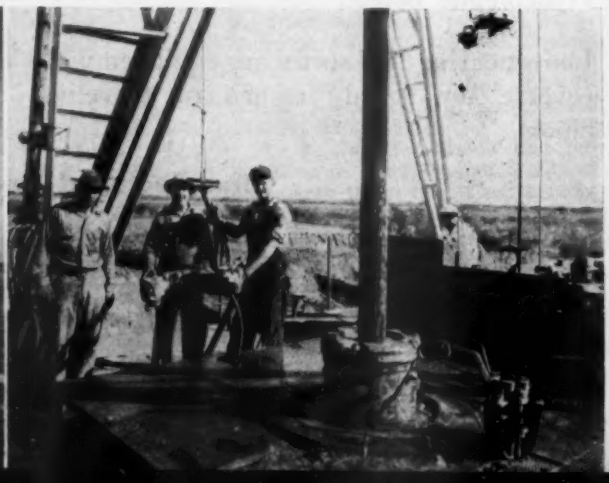
All rig operations, including engine throttles, clutches and drives, speed changes, and brakes, are remotely controlled from a movable-type control panel. Power for the rotary-cathead unit and for the draw works and main pump is supplied by recently developed supercharged natural-gas engines. The rig, a Wilson remote-control "Giant" rated at 600 hp., is designed to drill to 8,000 ft. with 4½-in. drill pipe or to 9,500 ft. with 3½-in.

The feature of fully air-operated controls in conjunction with the movable control panel permits the driller to operate the rig from a seated position facing the derrick floor. From this position, well to the side and rear of the derrick floor, the driller has a commanding view of all rig operations; he is in a much better position to watch closely activities of the floor crew, especially those of the cathead man. The console is provided with quickly connected air-line extensions which permit it to be placed almost anywhere on the derrick floor.

Through use of the independent rotary drive and its builtin catshaft drive, it is possible to set the cement conductor pipe and dig ratholes before rigging up the draw works and power plant. This feature, therefore, makes for greater over-all drilling speed, and completely removes all possibility of injury to the driller from catline breakage.

Unitization of the draw works, transmission, and engines into a single skid which can be placed either at ground level or at truck-height level, likewise speeds up dismant-

Left: Engines, transmission, and draw works are combined into one skid, which is mounted on a low substructure with the draw works placed below the level of the derrick floor. Right: Looking across the derrick floor toward the driller's post.



ling, moving, and rigging-up operations. Only the rotary and catshaft drive unit and the remote-control console have to be elevated onto the derrick floor.

Specification data on the rig's various components are listed in the accompanying tabulation. Likewise, its layout is illustrated in photographs shown here. Thus in remaining paragraphs only data relative to the rig's most outstanding features will be given.

Independent Rotary-Cathead Drive

The independent rotary and catshaft drive unit is mounted on an H-beam skid 28 ft. long by 5 ft. wide. The outer end of the skid, on which is placed the prime mover, is supported by a collapsible extension to the derrick substructure. The entire skid was so unitized that when the rotary table is in place over the hole, the catshaft drive unit is properly positioned near the edge of the derrick floor.

The unit employs a Buda eight-cylinder gas engine with a rating of 248 hp. at 1,600 r.p.m. and a cylinder displacement of 1,290 cu. in. The engine is mounted on its supports, with the radiator facing toward the derrick floor and with the output shaft at the outer end. By so doing it is possible to turn the rotary table in the right direction without reversing the direction of rotation by means of gears. The one chain drive from the converter to the under drive shaft makes possible any desired ratio by simply changing one sprocket.

Power takeoff is through a Torcon unit, a combination torque converter and hydraulic coupling, direct connected to the engine flywheel. The output shaft of the converter, through a chain drive, transmits power to the propeller shaft which extends under the engine. The propeller shaft, in turn, carries the power to the front end of the engine where a forward and reverse gear box is installed, and thence through an air-controlled friction clutch to an Oilwell 17-in. rotary table.

A power takeoff in the upper part of the gear box provides the drive through a bevel gear and chain, to the cathead shaft mounted above the gear box. Remote air controls operate the Wichita spinning and breakout catheads. Also, to permit quick stoppage of the catheads or rotary table when necessary, an air-disengaged brake is installed on the propeller shaft under the engine.

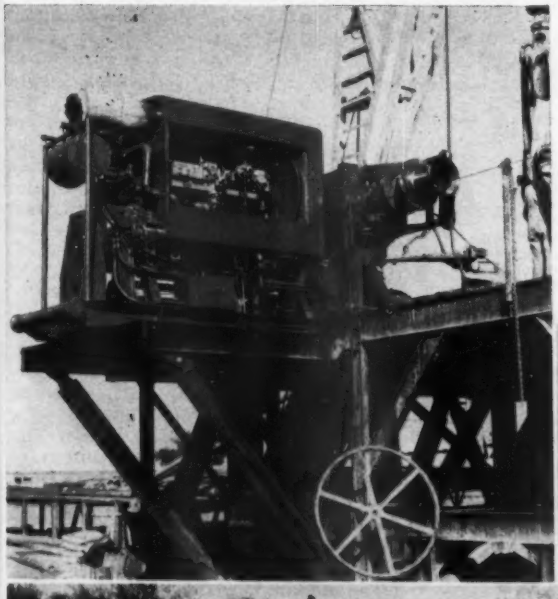
Draw-Works Unit

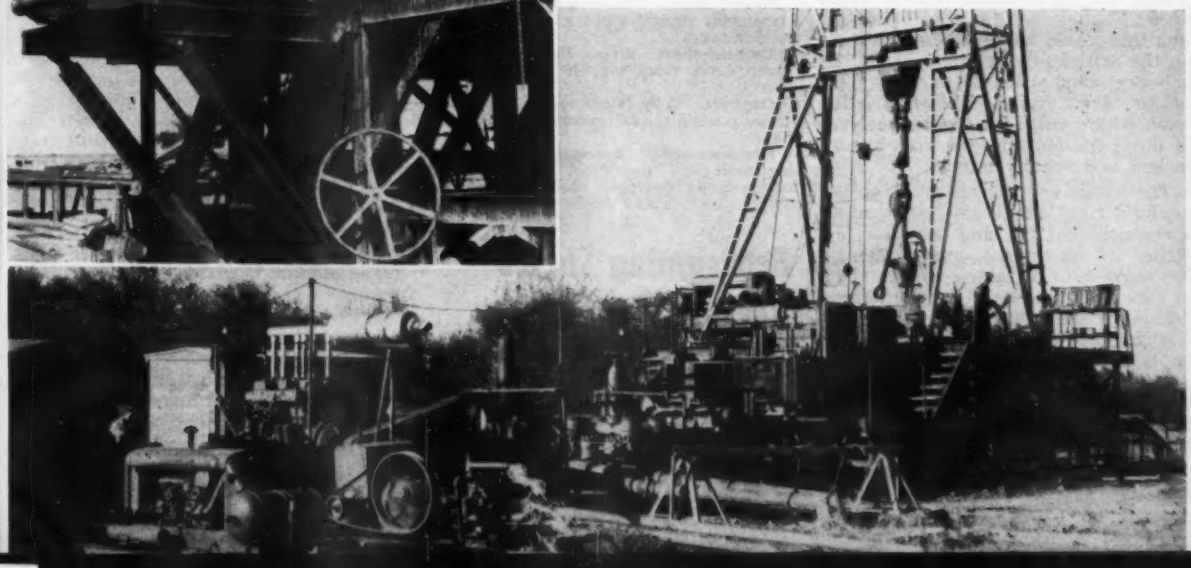
The main power unit consists of two engines, draw works, transmission, compound, and pump drive all combined into a single skid-mounted unit. Over-all length of the skid is 28¼ ft. and over-all width is 12 ft., the maximum permissible road width in most oil states. The air-compressor and water-pump drives are mounted on the outer end of the pump engine output shaft. Thus all necessary power equipment, other than that contained in the independent rotary drive, is contained in one unit.

The two engines are supercharged six-cylinder gas engines, with a stripped rating of 293 hp. at 1,000 r.p.m. and a cylinder displacement of 1,879 cu. in. They are mounted in tandem, the front engine driving the draw works and the rear engine driving the mud pump in normal operation. Either engine, however, can drive either way in case of emergency, and both engines can be compounded in coming out of the hole, or driving the pump.

The draw-works transmission is a two-shaft, chain-drive, self-contained unit providing three speeds forward and one reverse to the high and low-speed drum drives. Speed changes are accomplished automatically when the master clutch is disengaged. It is only necessary for the driller to set the speed selector control at the desired speed and then engage the master clutch.

When speeds are being changed the master clutch automatically engages only part way, just enough to rotate the transmission shaft to permit the jaw clutch to engage, but not enough to cause any real power which might produce shock. Only when the jaw clutch is fully engaged does the master clutch go into full engagement. This operation is made possible by a lock on the transmission air shift system which will not turn on full air pressure to the master





Left: Supercharged gas engine and torque converter used to drive the rotary table and catheads. The engine was mounted with the radiator facing the derrick floor so that it is not necessary to reverse the direction of rotation. Catshaft on table drive unit solves problem of what to do with cathead shaft in a very satisfactory manner. Below: Over-all view of the rig and jackknife-type derrick. In the foreground is the auxiliary mud pump with individually powered water pump and light plant.

XUM

clutch until the jaw clutch in the transmission is fully engaged.

The drum clutches, as well as the clutch in the pump drive and the master clutch, are of the air-tube disk type and engage without shock. The high-speed clutch is a single-plate and the low-speed is a double-plate clutch (four friction faces). These are mounted inside the brake rings so as to carry the driving torque direct from the drive sprocket to the drum without any torque on the drum shaft.

In addition to the air-controlled, water-cooled brakes with which the draw works is equipped, a separately skid-mounted Parkersburg hydromatic brake mounted in the derrick substructure is driven by the drum-shaft extension. By being separately mounted it is possible for the rig to drill the first few thousand feet of hole before the hydromatic brake is attached.

Between the universal coupling on the drum-shaft extension and the hydromatic brake shaft, a Wilson free-wheeling clutch is installed. This clutch is so designed that it drives the rotor of the hydromatic brake at all times when the drum turns in the direction to lower the drill pipe. When the drum turns in the direction to take up the empty block, however, the clutch instantly releases so that the rotor of the hydromatic brake remains completely motionless during the lifting of the empty blocks. The action is entirely automatic.

A single-step jaw clutch between the drum shaft and the universal coupling throws out this entire drive when the pipe is being lifted. It is necessary only to engage this clutch lever one time for each trip into the hole and disengage it at the end of the trip. It cannot be engaged except when the drum shaft is turning at very low speeds.

The biggest problem in connection with a remote-control rig is the brake. The brake on this rig is engaged by two powerful coil springs in two air cylinders, one on each brake band. Either of these springs has sufficient capacity to stop the heaviest load for which the rig is rated, and in event of air failure or breakage of an air line this would happen. The air valve on the driller's console is operated by a brake lever about 20 in. long. This brake lever has a Wilson friction latch which will lock the brake lever in any position, and yet may be unlocked and readily moved.

The brake lever is operated by the driller's right hand, the same as on a conventional rig, and the first few inches of movement corresponds to the movement of taking up the slack in a conventional hand-operated brake. At the point where the slack is taken up and the brake starts to apply, a spring pressure is felt by the driller, which warns him of this position and then the more pressure he applies to this brake lever, the more braking action takes place on the drum, so that the driller can tell by the feel of the tension the amount of braking which he is applying.

Considerable experimental work has had to be done on this brake to secure exactly the desired characteristics, but it is now believed by the manufacturer and the owner of this rig that these problems have been successfully solved, and here for the first time is a truly practical and successful remote-control air brake. Light or heavy loads can be handled with ease and stopped with precision. The brake can be set at any point and will feed perfectly at any depth within its rated capacity. The present rig is equipped with a hand brake on the derrick floor for emergency use, but the owner states that on future rigs he will probably leave this off inasmuch as the air brake has proved so satisfactory.

At the time of writing, the rig had been used to drill four wells in the Alfred area of southwestern Texas. All were to the relatively shallow depth of about 5,000 ft.

RIG SPECIFICATIONS

Designation or rig.—Wilson remote-control "Giant."

Rated drilling capacity.—8,000 ft. with 4½-in. drill pipe.

Power.—Draw works and main mud pump, two supercharged gas engines (stripped rating, 293 hp. at 1,000 r.p.m.); independent rotary and cathead drive unit, one supercharged gas engine rated at 260 hp. at 1,600 r.p.m.

Compound.—Drives: engine to engine 1¾-in. double roller chain; engine compound to draw works, 1¼-in. triple chain; engines to pump, pulley and V-belts from No. 2 engine-shaft extension. Clutches: engine power takeoffs, mechanical disk combined with flexible link couplings; master and pump, air tube disk type.

Transmission.—Speeds: three forward and one reverse. Capacity: 600 hp. maximum. Drives: 1¾-in. double chain, two shafts. Clutches: air-operated jaw in conjunction with air tube disk master clutch.

Draw works.—Line speeds: six forward and two reverse. Drum drives: 1½-in. double chain from transmission output shaft extension to high-speed drum and 1¾-in. double to low-speed drum. Drum clutches: air tube disk type. Drum brakes: two-piece 10-in. band with circulating water-cooled replaceable brake rings. Auxiliary brake: hydromatic with free-wheeling clutch. Drum size: 18-in. diameter by 40-in.-long barrel (between flanges) with 42-in.-diameter flanges.

Rotary drive.—Torque converter from independent supercharged gas engine (rating given above).

Cathead-shaft drive.—Bevel gear and chain drive from takeoff in rotary drive gear box.

Controls.—Fully air operated with controls contained in movable console-type panel.

Remote-control brake.—Spring engage, air disengage. Has "feel" and flexibility of manually operated brake with friction lock to lock in any desired position.

Redesigning Shell's Heysham Refinery

(Continued from page 72)

duced by hydrogenation. The main difference between the two revamped units are that No. 3 distillation unit incorporates a stabilizer column in which the gasoline of all three units is stabilized, and that No. 2 unit embodies a stripping column for the gas-oil production of both Nos. 2 and 3.

Some trouble was experienced in the early operation of No. 3 distillation unit, which was the first to be brought in line. The major difficulty was severe bowing of certain of the radiant tubes in the heater, especially those on the bridge wall. The final design, which proved satisfactory, was to install series flow with the aid of new two-hole headers on the bridge wall and burner walls, with parallel flow across the roof with the original four-hole headers. The floor tubes were eliminated entirely.

Operation of the crude-residue system as designed also proved unsatisfactory. The problem was solved by the elimination of a surge tank from the system, a pump being connected to take suction directly from the bottom of both "A" and "B" columns. At a later date, the stabilizing system was redesigned to use "D" column only, and to employ 290-psi. steam as the heating medium. This latter alteration had the additional advantage that the stabilizer could operate independent of the rest of No. 3 distillation unit.

The stabilized gasoline is given a simple chemical treatment with caustic soda solution followed by a wash with sodium hypochlorite solution. Gas from the three distillation units is held on balance with a water-sealed gas holder and fed to the stabilizer by the compressors. In addition, all crude-oil and unstabilized-gasoline-storage tanks are connected to the gas-holders. The pressure held in this system is 6 in. of water. The stripped (C_4, C_5, etc.) gas from the stabilizer is stored in two fuel-gas storage tanks, each 12 ft. in diameter by 59 ft. 6 in. long, at a maximum pressure of 50 psi. The gas is burned in refinery heaters and boiler plant at 7 psig.

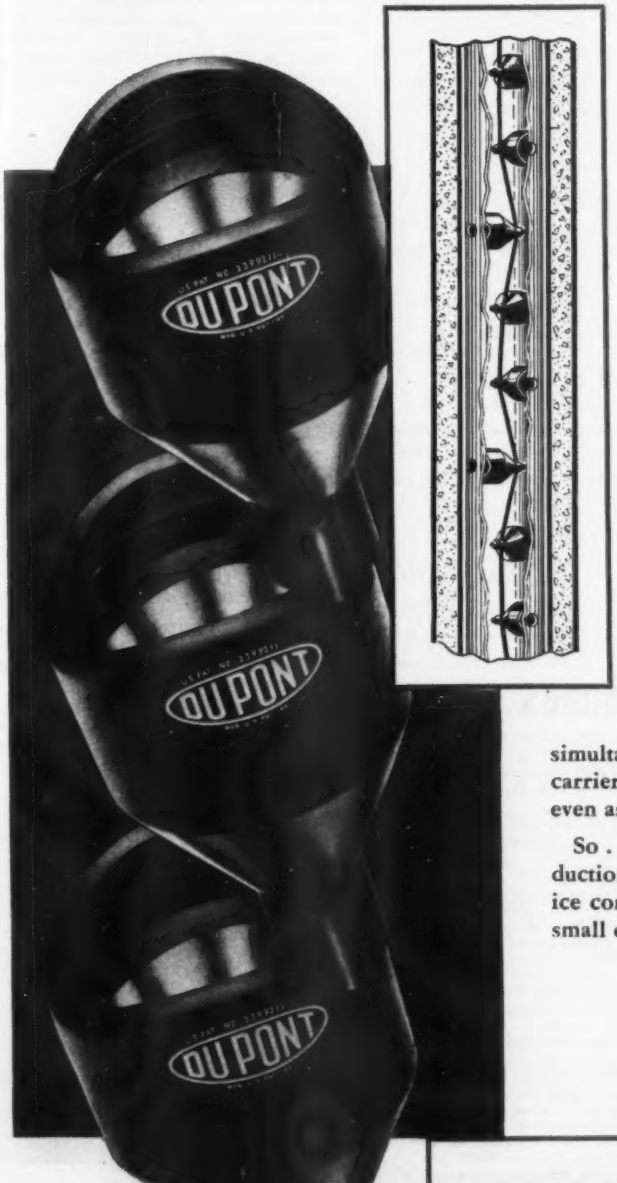
Catalytic Desulfurization Added

The isooctane plants and the dehydrogenation section at Heysham offered attractive possibilities for catalytic desulfurization. The revamping of the plant was completed at the end of November 1948, when the specification for the lead content of Heysham gasoline was reduced from 1.8 to 1.5 cc. TEL per Imperial gallon.

Part of the stabilizer feed is bypassed from the stabilizer charge line and forms the feed to the catalytic treating unit. After treatment this gasoline is returned to the stabilizer charge line. A certain amount of carbon is put down on the catalyst during the reaction, necessitating periodic catalyst reactivation, which normally takes 12 hours to complete. The barrels per day basis capacity of the catalytic plant is about 550

For Maximum Production Results

specify Du Pont Jet Perforators



The tremendous power and penetrating action of Du Pont Jet Perforators is produced by a shaped charge with conical copper liner within a molded plastic shell. Sketch shows typical arrangement of Perforators in a carrier.

WHEN oil well service companies are engaged to perforate well casings, always be very sure to ask that Du Pont Jet Perforators be used exclusively on the job.

These Perforators are precision instruments . . . another development of Du Pont Explosives Research . . . and they're designed to do a better, quicker, more efficient and more economical job of perforating.

Du Pont Jet Perforators contain the most powerful explosive made. When detonated, they create a jet of tremendous strength. This cuts a clean, sharp hole through both the casing and its cement sheath, and penetration extends well beyond the range of "mud damage." It's a smooth action that leaves a minimum of burr in the casing so tools can be lowered through the perforated area without interference. There are several sizes of the Jet Perforators available, and each will readily penetrate one, two, or three strings of casings.

Rig time is saved by using Du Pont Jet Perforators because the Perforators are pre-loaded in carriers and arrive on the job ready to be lowered into the well. A symmetrical pattern is assured by simultaneously firing the entire contents of one or more carriers. The Perforators are unaffected by well temperatures, even as high as 350°F.

So . . . for an efficient, economical job and maximum production results from clean-cut perforations, be sure your service company uses Du Pont Jet Perforators. Many large and small oil operators are specifying them for every job.

E. I. du Pont de Nemours & Co. (Inc.)
Explosives Department
Wilmington 98, Delaware

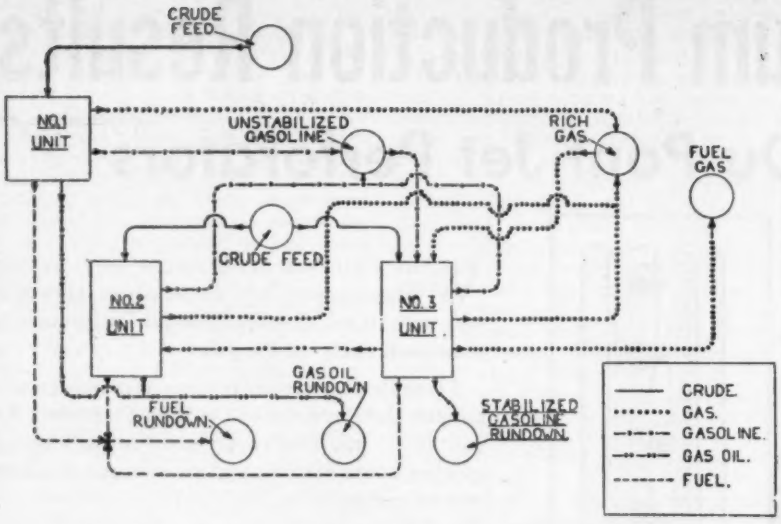
DU PONT EXPLOSIVES

BLASTING SUPPLIES AND ACCESSORIES

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

XUM



Heysham refinery processing scheme. (Courtesy Institute of Petroleum.)

TABLE 1—AVERAGE PROPERTIES OF HEYSHAM PRODUCTS

	Motor gasoline	Gas oil	Fuel oil
Specific gravity at 60°/60°	0.708	0.821	0.944
R.v.p. at 100° F., psi.	9.7	....	....
Doctor test	Negative	....	....
Sulfur (lamp), per cent weight	0.02	....	....
Octane No., C.F.R. (M.M.)	57	....	....
Octane No. +1.5 cc. TEL/I.G.	70	....	....
Gum existent, mg./100 ml.	2	....	....
Viscosity Redwood I at 100° F., seconds	....	32	900
Flash point, P.M. (closed), °F.	....	164	250
Pour point (max.), °F.	....	<0	+30
Ash, per cent weight	....	<0.01	<0.01
Carbon residue (Conradson), per cent weight	....	0.01	....
Sulfur (quartz tube), per cent weight	....	0.8	3.4

tons per day, and while operating on Kuwait gasoline the octane number of the product, when leaded with 1.5 cc. TEL/I.G. is six or seven numbers higher than that of the feed under the same conditions.

Apart from extensive plant alterations a very considerable amount of work was done to fit the storage and distribution facilities at Heysham for the new operations. In wartime, aviation gasoline left Heysham by road, rail, and sea. The problem to be solved was to obtain delivery facilities for an average total production of 4,500 tons per day.

It was in the sea distribution of products that the major problem lay. A portion of the northern side of the harbor which had a depth of only 14 ft. was dredged to equal one of 17 ft. in the remainder of the harbor, and the actual berth area at the pontoon was dredged to a depth of over 21 ft. to enable a vessel of 3,000 tons capacity to remain at the pontoon in a loaded condition at the lowest tides. Gas oil is loaded at the two berths in the harbor by pipe line from the tanks in the Air Force Reserve Depot. Fuel oil is pumped from the large refinery rundown tanks into 4 of the 5,000 tanks in the crude-oil farm which were specially steam-coiled.

The average properties of the products are shown in Table 1.

BOOKS

THE OIL PRODUCING INDUSTRY IN YOUR STATE. 1950 Edition. Published by the Independent Petroleum Association of America, Washington and Tulsa. 61 pp.

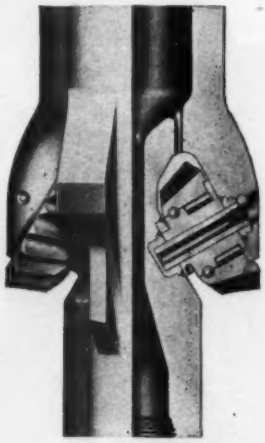
This interesting volume contains statistical information on all phases of the oil industry in 26 producing states, as well as charts and graphs which deal with national economic trends in the industry. Significant comparisons shown in charts include production and reserve increases over a 35-year period, oil production as compared with other minerals, value of production in relation to other oil industry trends, price index over a 25-year period, and a comparison of hourly earnings in petroleum and other industries. In statistical summaries on each state the book contains information on the geographical extent and economic contributions of the industry from the year of first recorded production up to January 1, 1950. It also shows leasing and exploration figures in six nonproducing states in which much interest has been shown by the industry. In North Dakota, for example, 18 per cent of the total land area of the state has been leased for exploratory purposes. J. E. Warren, Midland, Tex., president of I.P.A.A., is author of a foreword which points up the expansion of the oil and gas industry in recent years and its importance as the nation's number one mineral industry.

TWENTIETH CENTURY PETROLEUM STATISTICS, 1950. Published by DeGolyer & MacNaughton, Dallas. 80 pp. $7.50.

This is the sixth consecutive annual edition of this work, first prepared in 1945 by the Office of the Director of Naval Petroleum and Oil Shale Reserves, Navy Department. The book is fully indexed, and all information is charted, as well as presented in tabular form.

HOLE OPENER CUTTERS REMOVED BY EXCLUSIVE METHOD

Novel design of Security Hole Openers permits removal and replacement of unitized cutter assemblies at well. Sectional view of assembly illustrates simple method of mounting cutter. Inner bearing race or hardened steel sleeve, which is a part of unitized cutter assembly, does not rotate on main pin.



SECTIONAL VIEW OF SECURITY HOLE OPENER

After main pin locking devices have been removed, illustration below shows how piston rod is inserted in main pin on top of grease sticks. When rod is driven in by heavy blows from sledge hammer, hydraulic force produced by the grease ejects main pin. Cutters are then easily removed.

HYDRAULIC METHOD OF REMOVING MAIN PIN

This cutter replacement feature, plus the large rugged cutters that give extra life, make the Security Hole Opener unexcelled for opening more full gauge hole.

SECURITY ENGINEERING CO., INC.
ONE OF THE DRESSER INDUSTRIES
Main Office: Whittier, California
Branches in all major producing areas.
Export Office: Chanin Building, New York City

DESIGNED for Better Hole Opening

LARGE CUTTERS GIVE MORE FULL GAUGE HOLE

Greater width and diameter of cutters on Security Hole Openers provide more tooth surface for digging. This feature increases useful cutter life and the engineered pattern of the tooth itself provides the proper cutting action. Cutter teeth are hard-faced with the same material that gives Security Rock Bits that extra footage. Large cutters give greatest possible hole opening range between pilot hole and opened hole.

HIGH CAPACITY BEARINGS GIVE EXTRA WEAR

Large cutters provide space for heavier bearings which give longer life and increased footage per assembly. These high capacity ball and roller bearings run in hardened steel races and form a unitized cutter assembly. Thus, the extra bearing wear is built into the assembly itself, and the main pin is used for positioning only. Cutters run straight and true even after teeth are completely worn. The unitized cutter and bearing design eliminates loose bearing parts when replacing cutter assemblies.

DEMOUNTABLE CUTTERS FOR EASY REPLACEMENT

The cutters on the Security Hole Opener may be removed and replaced with simple hand tools right on the derrick floor. The main pin, which positions the cutter in the body, is ejected by a simple hydraulic method. The worn cutters are removed and replaced with unitized assemblies and the tool is then ready to open more hole. This feature is ideal for out-of-the-way locations.

Shown here is type PBR, which is used where sloughing or bridging in the rat hole is anticipated. Above is shown type RHR, which is used where formations are consolidated and the pilot bore clean.

Security

HOLE OPENER

ROCK BITS • CORING BITS • REAMERS • CASING SCRAPERS • SECURALOY

SECURITY ENGINEERING CO., INC.

ONE OF THE DRESSER INDUSTRIES

Main Office: Whittier, California
Branches in all major producing areas.
Export Office: Chanin Building, New York City

XUM

Bingham PUMPS
...PRECISION BUILT...FIELD PROVEN

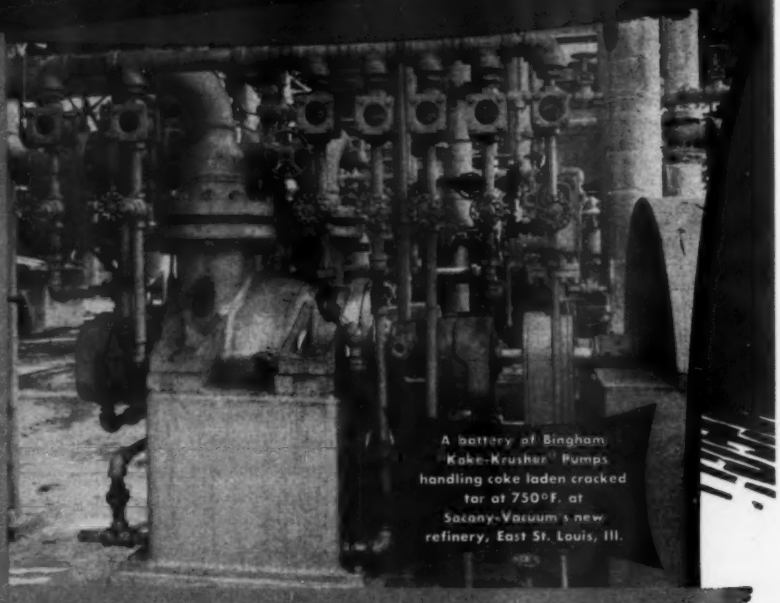
Koke-Krusher
...the only pump that crushes entrained coke

This centrifugal pump does what heretofore has been considered impossible — it instantly pulverizes large pieces of coke in the pumpage by crushing. A durable, positive crushing mechanism located in the suction chamber in front of the impeller eye instantly crushes large pieces of hard coke entrained with the pumpage and pulverizes them before they can enter and clog the impeller and system equipment.

CRUSHES INSTANTLY

• • •

All Bingham Pumps are precision built in our new and modern plant. All rotating parts are dynamically balanced. All parts requiring close tolerances are ground on heavy duty precision grinders.



A battery of Bingham Koke-Krusher® Pumps handling coke laden cracked tar at 750°F. at Socony-Vacuum's new refinery, East St. Louis, Ill.

One of the heavy duty precision grinders in our new modern plant.

SEND NOW for Koke-Krusher Folder 106

Tells why it is sound economy to use the Koke-Krusher on new installations or for the replacement of worn-out, old style reciprocating pumps. Wire, write, or phone the Bingham Pump Sales Office nearest you.

Bingham — DOUBLE VOLUTE RADIAL BALANCE — PUMPS SINCE 1921

GENERAL OFFICES:
705 S.E. Main Street
Portland, Oregon

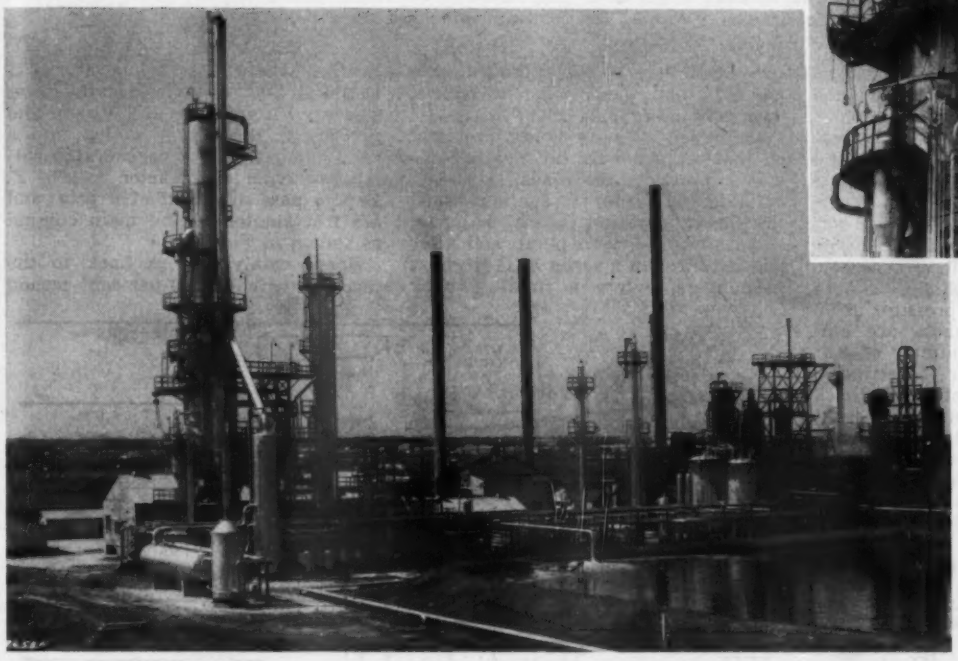
FACTORIES:
Portland, Oregon
Vancouver, Canada

Sales and Service Offices: BOSTON, MASS., 113 Broad Street • CHICAGO, ILL., 275 Old Colony Bldg., 407 South Dearborn Street • HOUSTON, TEX., 1206 Union National Bank Bldg. • MIDDLETOWN, OHIO, 505 Federal Savings & Loan Bldg. • NEW YORK CITY, N. Y., 611 Graybar Bldg., 420 Lexington Ave. • PITTSBURGH, PENN., 102 Mt. Lebanon Blvd. • SAN FRANCISCO, CALIF., 270 Fremont St. • SEATTLE, WASH., 316 Joseph Vance Bldg., 1402 Third Ave. • ST. LOUIS, MO., 6524 Clayton Road • ST. PAUL MINN., 205 South Robert St. • TULSA, OKLA., 200-206 N. Denver St. • VANCOUVER, CANADA, 3550 E. Broadway

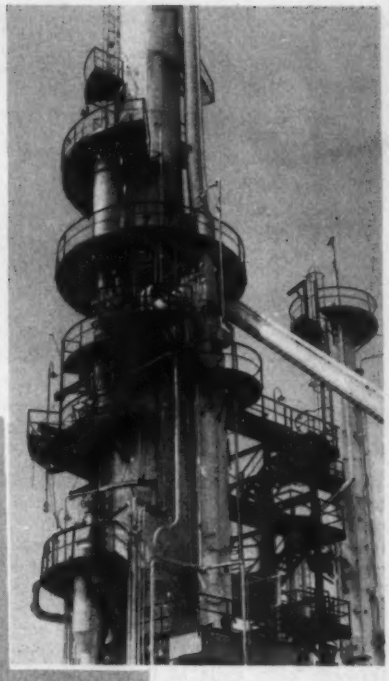
Panhandle's "Kitten Cracker" Has 1,250-Bbl. Daily Charge

Unit smallest of its type in United States

by R. W. Jacobs*



View of Panhandle Producing & Refining Co. refinery at Wichita Falls. The main fractionator in the new fluid cat unit is the first vessel to the right of the regenerator-reactor column. Catalyst hoppers and absorber and debutanizer are shown at right center. In right background is the plant's thermal cracker.



A closeup view of the reactor-regenerator column showing the vertical waste-heat boiler.

THE new fluid catalytic cracker at the Wichita Falls, Tex., refinery of Panhandle Producing & Refining Co. is the smallest of the type operating in the United States. On stream since February 15 of this year the unit is operating satisfactorily on 1,250 bbl. per stream day of virgin gas-oil charge and has produced 50 per cent of 93.0-octane, 10-R.v.p. gasoline on 68 per cent conversion.

The unit can easily handle 1,500 bbl. per stream day but it has been operating on 1,250 bbl. per stream day gas-oil charge in order that stocks may be built up to carry operations through any shutdown period which may occur with the refinery's thermal unit.

Panhandle's refinery consists of a Dubbs combination unit capable of charging 5,000 bbl. per stream day of North Texas crude and a small still of 15,000,000-B.t.u. per hour capacity for cutting out 1,300 bbl. per stream day of 33.0° A.P.I. gas oil for the catalytic cracker. The topped crude of 19.0° A.P.I. gravity is then charged to Dubbs along with 200 bbl. per stream day of catalytic recycle stock and 300 bbl. per stream day of naphtha which provides enough charge for ordinary Dubbs cracking. The straight-run products are stripped out of the crude up to 580° F. by heat exchange.

Over-all operations of the entire plant are shown in more detail in Fig. 1. Input to the refinery is 40.0° A.P.I. North Texas crude charged by 7 by 6 by 10 steam pump through preliminary kerosine-to-crude and vapor-to-crude heat exchangers and into a two-unit Petreco desalter at the rate of 5,000 bbl. per stream day. After desalting from 60 lb. to 2 lb. per 1,000 bbl. the crude then goes, at 50 psig., through vapor-to-crude exchanger and thence into No. 1 crude tower at 330° F.

Here a 330°-e.p. cut of light gasoline is taken overhead and the bottoms are picked up by a 10 by 5 by 12 pump discharges through a gas-oil exchanger, a bottoms exchanger, and then into No. 2 crude tower at 580° F. A 390°-e.p. overhead naphtha is taken here along with jet fuel No. 1, kerosine, and diesel fuel as side streams. All these streams flow by gravity to rundown tanks. Topped crude of 26.0° gravity in the bottom of No. 2 crude tower is charged by 10 by 5 by 12 steam pump to a gas-oil still where it is heated to 760° F. before going to a flash tower. Overhead from the flash tower is 1,300 bbl. per stream day of 33.0° A.P.I. gas oil. The bottom of this tower is then charged to No. 1 fractionator as previously described.

Naphtha or kerosine at the rate of

*Panhandle Producing & Refining Co.

XUM

Left: Main compressor house for the new cat unit. In this view the blowers are shown in the foreground and the gas compressors in the far end of the building. Right: The fluid cracking unit's control room. This section of the unit is located centrally in the new section of the plant about midway between the main fractionator and the absorber.

300 bbl. per stream day is charged to the light-oil side of a two-coil updraft furnace along with regular bottoms of No. 2 fractionator where cracking takes place at 1,010° F. and 450 psig. The heavy-oil coil is held at 910° F. and 500 psig. A 6½ by 4⅝ by 18 pump driven by a 190-hp. gas engine furnishes the bulk of charge through both coils at 8 to 1 recycle ratio. The reaction chamber is held at 275 psig. and plant pressure at 75 psig. Two flash chambers are employed to produce residuum of 8.0° to 10.0° A.P.I. or lower if desired.

Light oil from the bottom of No. 2 fractionator supplies sufficient heat for reboilers at main stabilizer tower and poly plant. This arrangement limits the amount of reforming obtained due to the large heat load on the light-oil side of the furnace.

Cracked gasoline of 400° e.p., 10 R.v.p. is produced and the gas is processed in the poly plant. Excess gas is burned under stills and boilers. The poly plant is a U.O.P. catalytic type which is now being enlarged so that all gas may be handled. No L.P.G. products are made.

Raw gas oil from storage is charged to the cat cracker by a 55-g.p.m. steam-turbine-driven pump and after passing through a series of G-fin heat exchangers, enters a small circular heater where its temperature is raised to 700° F. After leaving here, slurry oil is injected into stream and at 650° F. the charge is fed into a riser along with hot regenerated catalyst to enter the reactor at 900° F. Vapors pass overhead at 9 psig. and are fractionated in the main column as shown in Fig. 2.

Spent catalyst drops back to the regenerator with 0.70 per cent carbon

OPERATING DATA CATALYTIC CRACKING, PANHANDLE REFINERY

	Re-Regenerator	Re-Reactor
Pressure	14.3	9.1
Dense phase, °F.	1,088	900
Dilute phase, °F.	1,063	895
Cat. quantity, tons	12.4	4.5
Slide valve, ΔP	5.0	5.0
Cat. carbon, wt. per cent	0.16	0.70
Cir. rate, tons/min.	1.50	1.50
Carbon-oil ratio	....	8.0
W.H.S.V.	....	2.0
Injection steam, lb./hr.	200	....
Strip steam, lb./1,000 lb. cat.	....	0.80
Slurry return, bbl./day	....	535
Riser air, S.C.F.M.	3,200	....
Cat. activity, U.O.P. wt.	26	....
Cat. loss for run, lb./bbl.	0.462	....
Flue gas:		
CO_2	9.8	....
CO	6.8	....
O_2	2.1	....
Carbon burned, lb./hr.	1,010	....
H_2 burned, lb./hr.	118	....
CO_2-CO ratio	1.44	....
H_2, wt. per cent cat. deposit	10.6	....
Slurry, b.s. and w.	....	0.1
Raw-oil charge, bbl./day	....	1,250
Days on stream	....	83
Conversion	....	57.0
Gasoline, vol. per cent	....	43.0
Lt. cycle, vol. per cent	....	33.0
Hvy. cycle, vol. per cent	....	10.0
Poly. and butane, vol. per cent	....	7.0
Gas, vol. per cent	....	2.5
Loss, vol. per cent	....	4.5

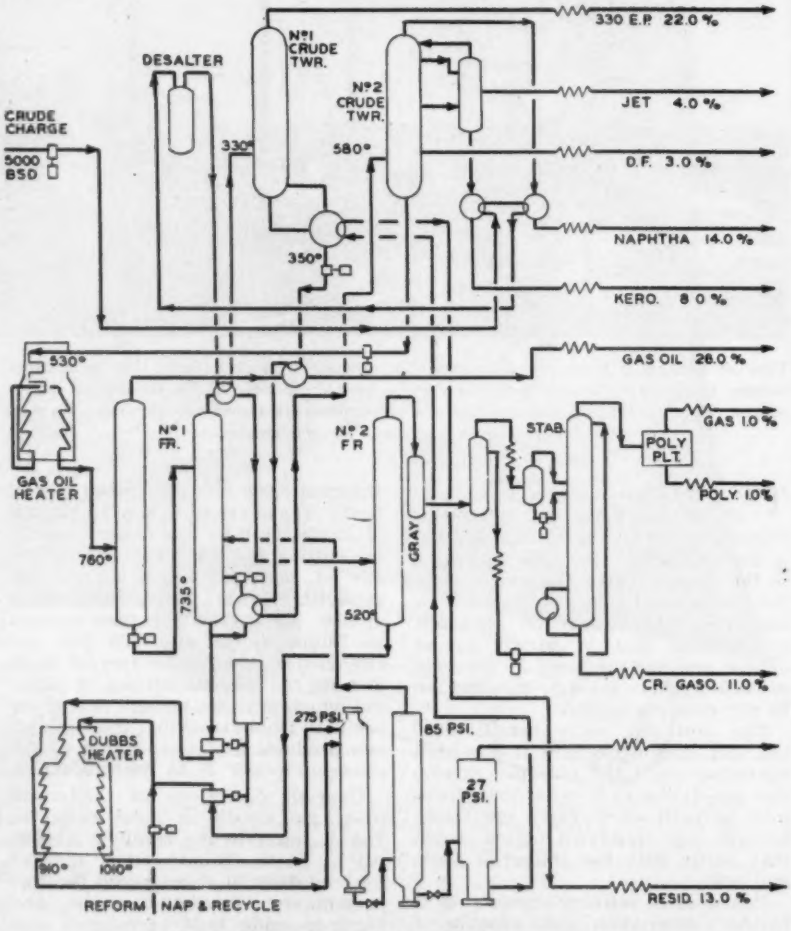


Fig. 1—Flow scheme of over-all refinery operations.

was this call necessary?

Some "Moral Insurance" here might have avoided a serious accident

Workmen's compensation is a fine thing—but it can't replace a mangled arm.

Safety laws prevent many accidents—but they can't cover every hazard of an individual plant.

Accident prevention which goes *beyond the law* is an unwritten responsibility of every employer. It is his "Moral Insurance" for his employees welfare.

The premiums for "Moral Insurance" are not high. They do not have to be paid for in fancy safety gadgets. Their cost is simply the institution of common sense safety regulations covering all local hazards—enforced by employee committees with the full support of management.

Yes—"plant safety" is a mutual job.

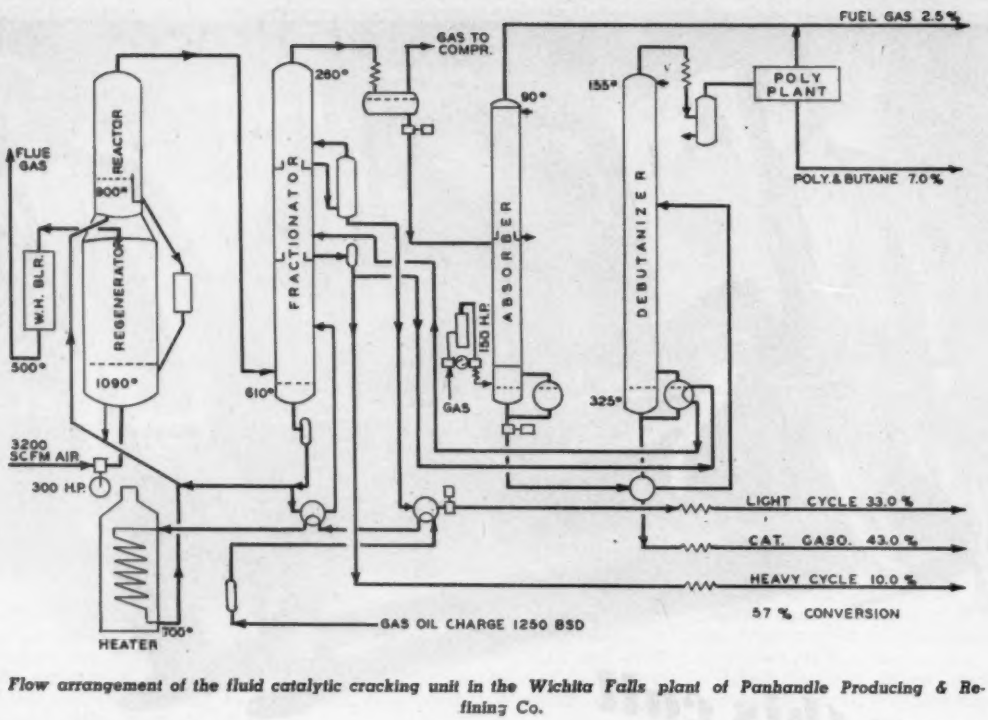
DON'T FORGET—THE LIFE YOU SAVE MAY BE YOUR OWN

A PUBLIC SERVICE PROJECT ★ THE ADVERTISING COUNCIL ★

Published in the public interest by:

THE OIL AND GAS JOURNAL
Tulsa 1, Oklahoma

XUM



Flow arrangement of the fluid catalytic cracking unit in the Wichita Falls plant of Panhandle Producing & Refining Co.

and is there revived to 0.16 per cent carbon with C-O ratio of 8 to 1. A steam generator of 2,540-lb. per hour capacity utilizes waste heat in the flue gases. Steam is used at 120 psig. to drive the three turbines on the unit and exhausts into a 10-psig. closed manifold system.

Air is supplied for regeneration at 18 psig. by one of two 300-hp. compressors operating at 350 r.p.m. normal speed. Adjustments are made by pockets and speed. One unit is always available for emergencies. The power end is an eight-cylinder engine with explosionproof ignition system.

Gas from the receiver drum is picked up at 7 psig. by one of two 150-hp. compressors and via two-stage compression is charged to the absorber at 185 psig. Like the air compressors one of these units is available as a spare. Variations in gas volume are followed by aut matic speed control of the compressor as well as hand adjustment of pockets on the low stage.

Gasoline from the bottom of the absorber is pumped to a debutanizer where it is stabilized to 10 R.v.p. under 200 psig. The overhead product, rich in olefins, is sent to the poly plant as a gas. The cat gasoline is given a caustic wash and sent to storage.

Slurry oil is circulated by a 170-g.p.m. centrifugal pump and heavy recycle furnishes heat for the debutanizer reboiler by means of a 190-g.p.m. centrifugal pump. Both pumps are driven by turbines. The remainder of the pumps throughout the unit are reciprocating steam-driven units.

Instrumentation of this plant is excellent as testified by the array of equipment, in the control house and at various other points in the unit. One feature is the multiswitch indicating pyrometer located in center of operator's desk in control house. Aluminum silicate catalyst MSA of American Cyanamid Co. is used in the unit.

Products from the plant are sold by tank truck to Panhandle's own jobbers throughout areas in Texas and Oklahoma. Officers of Panhandle Producing & Refining Co. are J. V. Boyce, president; R. C. Stanford, executive vice president, and G. W. Reed, vice president and sales manager.

Design of the unit was by Universal Oil Products Co., Chicago, with erection by Jones & Laughlin Supply Co., Tulsa.

SUMMARY OF PRODUCTS, PANHANDLE REFINERY

Property	S.R.	Nap.	JP1	Kero.	D.F.	G.O.	Ther.	Cat.	L.C.	H.C.	Slurry	Resid.	Poly.
A.P.I.	68.2	55.0	46.7	42.6	38.8	33.4	39.0	60.0	33.1	32.1	24.7	9.9	69.0
Color	+30	+30	+30	+28	+12	5 NPA	+26	+28	2 NPA	3 NPA	5 NPA	Black	+16
Distillation:													
I.b.p.	93	130	314	367	310	350	82	88	410	388	530	....	87
10%	135	210	334	388	433	512	142	118	473	544	610	....	143
50%	205	284	362	420	478	606	266	210	510	590	660	....	226
90%	295	350	396	455	522	725	370	374	565	628	....	....	....
End point	328	386	428	485	580	....	398	426	600	662	....	....	426
Recovery	94	98	98	99	99	....	95	97	99	99	....	....	97
R.v.p.	12.0	4.0	....	....	....	....	10.0	10.1	....	....	....	....	14.8
Doctor	Neg.	Neg.	Pos.	Neg.	Pos.	....	Neg.	Neg.	....	....	....	....	Neg.
Corrosion	Neg.	Neg.	Neg.	Neg.	Neg.	....	Neg.	Neg.	Neg.	Neg.	....	....	Neg.
Sulfur	.01	.01	.04	.11	.26	....	....	....	....	....	....	1.1	....
Cen. S at —40° F.	....	....	5.4	....	....	....	....	....	....	....	....	....	....
U.S.S. at 100° F.	....	....	....	....	32	....	....	....	....	....	....	....	....
U.S.F. at 122° F.	....	....	....	....	....	....	....	....	....	....	....	178	....
T.C.C. Fl.	....	....	112	150	....	....	....	....	....	....	....	....	....
P.M. Fl.	....	....	....	....	140	....	....	....	150	....	....	174	....
Con. carbon	....	....	....	....	.002	.05	....	....	....	....	....	13.8	....
B.s. and w.	....	....	....	....	....	....	....	....	....	....	1.0	0.6	....
Oct. (F-1):													
Clear	61.7	44.4	....	....	....	....	74.6	93.0	....	....	....	....	93.0
+2 cc.	79.9	62.8	....	....	....	....	85.6	97.4	....	....	....	....	....
+3 cc.	82.7	68.2	....	....	....	....	87.6	98.5	....	....	....	....	....
Oct. (F-2):													
Clear	....	....	....	....	....	....	68.0	79.8	....	....	....	....	....
Gum, A.S.T.M.	1.0	1.0	1.8	....	....	....	2.0	2.0	....	....	....	....	6.0
Hrs. ind.	4+	4+	....	....	....	....	4+	4+	....	....	....	....	....
Pour pt., °F.	....	....	—76	—35	—5	....	....	....	—20	....	....	32	....

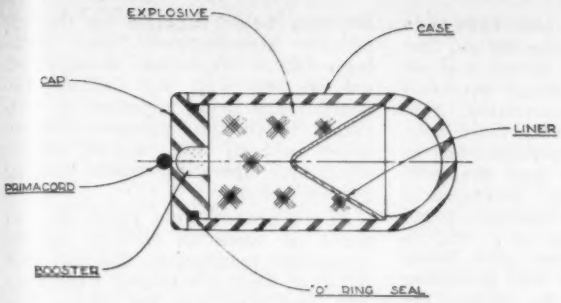


Fig. 1—Open-hole charge in a pressure-resistant case.

Jet Process of OPEN-HOLE SHOOTING

by W. T. Box

THE men first interested in the development of lined shaped charges for oil-well shooting envisioned two basic applications. The first was the now-common jet perforator for perforating casing. The second is the newer and growing process of open-hole shooting. It is this second process that is the subject of this article.

Bulk explosives for shooting uncased wells have been used for many years; however, the practice is not always a "pin point" or exact operation as regards the desired concentration of explosive. It was felt that the use of the lined shaped charge would increase the effective work done per unit of explosive and would accomplish deeper penetration into the producing formation. The lined shaped charge would reduce hole enlargement and resultant expensive cleanout work. The advantages of accuracy, flexibility, and selectivity of casing perforating would be introduced into open-hole shooting. It was known that the plastering and sealing effect sometimes found with bulk-explosive shooting and cleanout practices, causing reduced permeability, was not present with the lined shaped charge. The mechanics of the jet formation, which in practice performs like an extremely high-velocity bullet, fractures the formation between shots, tending to increase rather than decrease permeability.

W. T. Box is in charge of research and development of the jet process for Byron Jackson Co., the original licensee and collaborator in the development of the process. Box graduated from University of Santa Clara in 1940 with B.S. degree in mechanical engineering and has been employed by Byron Jackson Co. since that time.

Open-hole shooting with the jet process was introduced commercially in the summer of 1948, and nearly 75,000 charges have been fired to date. The application in well completions and workover jobs is becoming clear. It has now become standard practice with many operators, when completing with open hole in consolidated sand formations, to determine the

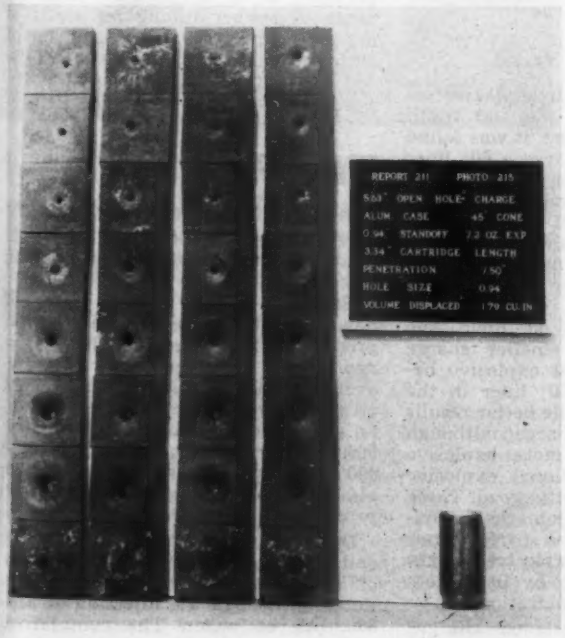


Fig. 2—(Left) Performance of the 5⅝-in. charge in 1-in. steel blocks.

Fig. 3—(Right) A completely assembled open-hole charge carrier being lowered into well.

Fig. 4—Fastening the primacord to the back of an open-hole charge.

most permeable intervals and selectively to shoot these zones. Excellent results have been obtained in many workover jobs by calipering the well bore of wells previously shot with nitroglycerin and firing into promising intervals missed in the original shooting.

Open holes with production very close to the casing shoe have been successfully shot without causing damage to the well. The acidizing of lime formations has been aided by this process when the breakdown pressures are abnormally high. The process has proved very effective in penetrating beyond the contaminated area around the well bore. More recently, the process has met with considerable success in the shooting of water-producing sands in uncased water wells in the mid-western states.

Encouraging Number of Successes

As is inevitable with a process of this type, many wells have been shot with no success. It was used as a "last chance" measure. Compared to these failures, there have been an encouraging number of successes and an additional and important application of the process has evolved. Cased wells that had been first shot with either the jet perforator or the bullet perforator and failed to respond, have been shot with these open-hole charges with success. This application, however, should be used only when conventional perforating methods have failed, as the open-hole charge is designed to give the greatest possible penetration within a given diameter well without regard to the cracking of casing. These charges, fired in casing, will result in cracking. However, with the casing backed up with cement in by far the greater number of cases, it has been possible to pass a full-gage tool through the perforated interval.

Since early in 1949 there have been two basic ideas in charge design. One was the use of a glass-lined and glass-sealed charge. The charge produced rather indifferent penetration, 2 to 3 in. in steel, but a very large hole. The second was a copper-lined charge entirely sealed from well pressures (Fig. 1). This charge produced a smaller hole but had excellent penetrating characteristics—5½ in. in steel. As the jet charges were developed to stand higher well pressures, it became necessary to thicken the glass in the first charge, resulting in reduced hole size with no gain in penetration. In the second charge it was only necessary to improve the properties of the case to stand high pressures, leaving the charge construction unchanged. The copper-lined design has been found more desirable for high-pressure charges, and the use of the glass charge was discontinued for high-pressure work.

Using the experience gained from work on the jet perforator and from knowledge obtained from those working on shaped charges outside the oil industry, the copper-lined open-hole charges were redesigned. What factors were considered in charge design?

Assuming a fixed length of charge, the optimum design is believed to be a delicate balance among three factors: First, diameter of the charge; second, standoff, which is the distance between the base of the liner and the first solid body the jet will hit; and third, the amount of explosive behind the liner. By theoretical analysis a charge of 2-in. in diameter was felt to be the most desirable. The two other factors were varied for two different sizes of charges, 4⅛ and 5⅝-in. long. To get the most desirable combination, it was necessary to vary the liner angle.

Liner Angle Varied

On tests the liner angle was varied from 90° to 45°. In the end result using steel as the target, it was found that in the 4⅛-in. charge a 60° liner gave 5-in. penetration, the 45° liner 3½-in. penetration, and the 90° liner 3-in. penetration. All charges contained 4 oz. of explosive. In the 5⅝-in. charge, again using steel as the target, the 45° liner gave 7½-in. penetration (Fig. 2), while the 60° liner only 5½-in. The 45° liner gave poor results in the smaller charge because of insufficient explosive behind the cone. The 60° liner in the 5⅝-in. charge gave little better results than the smaller charge, although nearly 75 per cent more explosive was used. The additional explosive behind the cone did little good. These data definitely eliminate the soundness of comparing the performance of two charges by explosive weight alone. More explosive by itself does not mean greater penetration.

These properly designed charges are now being supplied by the explosive manufacturer with high-temperature explosive suitable for use in any well yet drilled. The charges are being supplied as cartridges to fit into pressure-resistant cases used by the various service companies operating under the jet process license.

At the present time, there are four types of cases in service: plastic, aluminum, magnesium, and cast iron. All have their advantages. Aluminum and cast iron are the only cases capable of withstanding high pressures. Plastic and magnesium, although very desirable materials, are limited to low-pressure service.

Two other components of open-hole shooting have offered serious design problems: First, the design of the carrier to lower the charges to the shooting zone; and second, the means of detonating the charges.

The carriers must be strong enough to lower the charges to the shooting zone without damage and yet leave a minimum amount of material in the well after shooting. A fabricated aluminum box, Fig. 3, has been used successfully since 1948. Aluminum sheet in small pieces has been found unobjectionable in this type of service. This aluminum structure is light, less than 2 lb., and yet is surprisingly strong because of its design.

A cast-iron carrier has recently been introduced and has met with considerable success.

Detonation of the charge is accomplished by running plastic-covered explosive cord, commonly called Primacord, along the back of the charge case (Fig. 4). This cord detonates a booster sensitive explosive through a baffle in the case lid. This booster, in turn, detonates the charge. The plastic-covered cord is enclosed in a temperature-resistant synthetic-rubber tubing for wells at depths below 6,000 ft. One piece of Primacord is used, running from the top to bottom shot. This assures positive detonation of all charges.

Water Flood

(Continued from page 62)

service. The percentage of old wells in operation at any given time was small.

Because of the rapid rate of development during recent years, production from the flood has set a new record each year since 1944 for average daily production. The 1949 oil production totaled 330,495 bbl., or an average daily rate for the year of 905 bbl. During 1949, a total of 6,369,000 bbl. of water was injected, or 19.3 bbl. of water for each barrel of oil produced.

During the life of the flood to the end of 1949, a total of 2,519,000 bbl. of oil had been recovered by water flooding through the injection of 31,800, bbl. of water. The cumulative

water-oil ratio for the flood reached a record low of 8.5 in 1940 and has increased gradually since then to a ratio of 12.6 bbl. of water injected for each barrel of oil produced to December 31, 1949. The oil recovery, expressed as barrels per acre, reached a peak of 4,384 at the end of 1944 but since then has declined because of the rapid development of new acreage from which much oil is yet to be recovered.

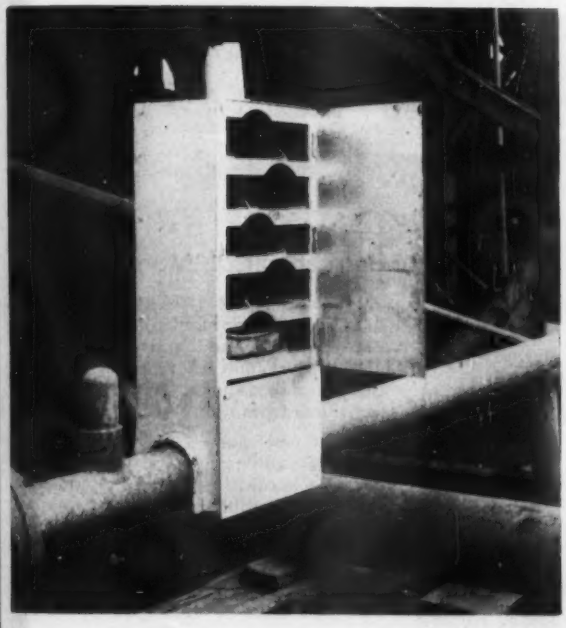
Because of the continuing development of new flood acreage production, statistics on the flood as a whole give only a small indication of the success of the project. Although development of the flood started in 1937 and 1938, only two leases (Kaney and Ingraham) were included in the project until late in 1941. The flood on the Kaney lease was extended about threefold during 1946, 1947, and 1948.

Development on the Ingraham lease was completed in 1941, however, and there has been no subsequent extension of the flood acreage on this lease expect for the development of an additional 23 acres in 1948. By extrapolating the trend of the production curve for this lease before the new development in 1948, data may be obtained that indicate the final result of flooding the 102.4 acres covered by the original flood development.

The extrapolation indicates that 591,200 bbl. of oil was recovered from the original flood development on the Ingraham lease to the end of 1949 by the injection of 8,030,000 bbl. of water. This represents the injection of only 13.6 bbl. of water per barrel of oil produced and a recovery of 5,775 bbl. of oil per acre. It is estimated that the ultimate oil recovery from this tract by water flooding will approximate 6,200 bbl. per acre.

Although the high recovery per acre obtained on the Ingraham lease may not be maintained throughout the entire project, the performance of this lease suggests that there are many profitable years ahead for the project and that it will continue to yield an appreciable part of the oil produced in Neosho County.

OPERATING IDEAS

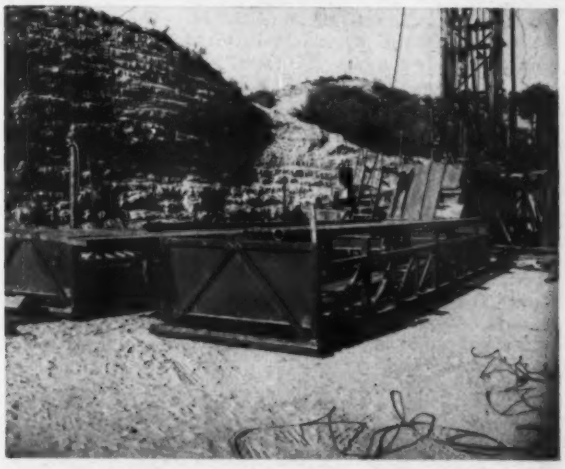


Sample Dryer

THIS dryer, used to dry formation samples, has slide trays for holding the samples. It is heated by a steam coil in the back, and vented on top to let moisture out. The dryer is mounted close to the rig on a steam line with a take-off from the line supplying steam to the coils.

Combination Pipe Rack

AN ideal pipe rack or storage box for portable drilling units is being used in place of the conventional type where pipe is loaded and unloaded when moving from one job to the next. This operator picks up pipe, rack, and all when on the go. Three such racks as shown are used on this rig. The racks are so designed that pipe when not in use is stored on top of the rack in a conventional manner. This is accomplished by lateral I-beams which engage in the upright I-beams of the rack thus forming a floor for the pipe as shown. The runway is



supported by short lengths of I-beams extended across the two racks. Short sections of angle iron welded to the I-beams keep them anchored in place while supporting the runway. Racks measure approximately 36 ft. long and 7 ft. wide.

Foundation for Side Movement

THE bases of practically all engines have slots which provide space to move the engine lengthwise with the pumping unit for adjusting belt tension, but few engines can be moved sidewise. One producer grouts 6-in. nipples into the concrete engine block where the engine bolts down. These nipples are slotted for several inches so that the engine can be moved sidewise. This makes it possible to run the V-belts true on the sheaves and it is not necessary for measurements to be made closer than the nearest inch.

QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

Relation of Cracking Yields To Viscosity of Cracked Fuel Oil

Viscosity of the fuel oil is our trouble on operating the cracking plant. What are reasonable yields when making specification A.S.T.M. No. 6 fuel oil and what loss in yield occurs when we make 150 Furol viscosity fuel oil instead of 300 viscosity?—F. M. C.

It is quite true that control of the viscosity and gravity of cracked fuel oil is the single most vital consideration in cracking-plant operation, presuming that serious coking is not occurring. However, very little factual information is available about the viscosity of fuel oil. About the only data are those of Mithoff, MacPherson, and Sipos, *"Characteristics of California Crude Oils," The Oil and Gas Journal, November 6, 1941, page 81.* They present the data shown in Fig. 1 on this page, but the extrapolations (dashed lines) shown here are more conservative than indicated by them. It is felt that slightly larger yields than those shown in Fig. 1 will be obtained from very viscous stocks (800 and higher viscosity).

In order to use the yield chart, the Saybolt Universal viscosity of the charge stock at 130° F., must be available. The approximate relationship between viscosity at 130° F. and gravity or boiling point is indicated in Table 1. It was based primarily upon the viscosity data of Questions on Technology item entitled, *"Viscosity of Residues of Crude Oils," The Oil and Gas Journal, June 22, 1950.*

It will be noted from Fig. 1 that yields decrease sharply as the viscosity of the fuel oil is reduced:

Viscosity of cracked fuel	Charge stock (%) For 800 vis.	For 400 vis.
400	33.5	39.0
300	32.0	37.5
200	28.0?	34.0
150	24.0?	31.0
100	17.5?	25.0?

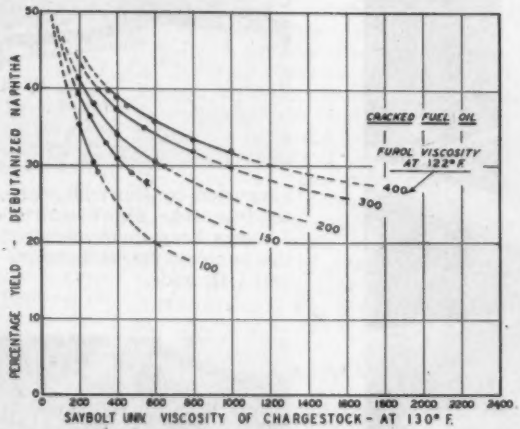


Fig. 1—Cracking yields as a function of fuel-oil viscosity. (Courtesy Mithoff, McPherson, and Sipos.)

A common method of estimating cracking yields (Petroleum Engineering, first edition 1935, McGraw-Hill Book Co.) employs the difference in gravity of the charge stock and the cracked fuel oil. An examination of the yields of Fig. 1 on such a basis indicates that the gravities of the cracked fuel oils would need to be as shown in Table 2. The somewhat high gravities of Table 2 tend to substantiate the belief that the dashed portions of Fig. 1 show yields that are somewhat low. These fuel-oil gravities are thought to be high because Mid-Continent stocks frequently yield fuel oils of 4°-6° A.P.I., and California crudes (11.4 characterization factor) produce fuel oils having gravities as low as 0°-3°.

TABLE 2—APPROXIMATE GRAVITIES OF CRACKED FUELS
(From the yields of Fig. 1)

A.P.I. of charge stock	A.P.I. gravities of fuel oils of these characterization factors 11.2	11.4	11.6	11.8
20	—0.3	2.0	5.0	6.8
18	0.3	2.7	5.9	8.0
16	1.5	4.1	7.0	10.0
14	3.6	6.3	9.4	...
12	8.0	10.8	...	...

Petrochemical Manufacturers

In your April 12, 1947, issue you listed the manufacturers engaged in petrochemical production. We are unable to find such information in Tariff Commission reports. Where did you get the information?—R. F. D.

There are many U. S. Tariff Commission publications. Synthetic Organic Chemicals—U. S. Production and Sales (published yearly), shows many of the companies that manufacture chemicals from petroleum raw stocks. The 1945, 1946, and 1947 issues have since been published and the 1948 issue is about due.

TABLE 1—APPROXIMATE RELATION OF VISCOSITY, GRAVITY, AND MIDBOILING POINT OF RESIDUAL CRACKING STOCKS

A.P.I. gravity of feed	Boiling points and viscosities (U.S.S. at 130° F.) of stocks of these characterization factors — Intermediate base — 11.8 B.P.	11.8 Vis.	11.7 B.P.	11.7 Vis.	11.6 B.P.	11.6 Vis.	11.5 B.P.	11.5 Vis.	Naphthene base — 11.4 B.P.	11.4 Vis.	11.3 B.P.	11.3 Vis.	11.2 B.P.	11.2 Vis.	11.1 B.P.	11.1 Vis.
6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,030	....
7	....	....	....	....	....	....	....	....	....	....	....	....	1,040	....	1,000	....
8	....	....	....	....	....	....	....	....	....	....	1,045	....	1,010	....	970	....
9	....	....	....	....	....	....	....	....	1,050	....	1,015	....	980	....	940	....
10	....	....	....	....	....	....	....	....	1,020	....	985	....	950	....	915	....
11	....	....	....	....	....	....	1,030	....	990	7,000	950	6,000	920	5,500	885	5,100
12	....	....	....	....	1,045	8,200	1,005	6,000	965	4,000	925	3,300	895	3,000	860	2,500
13	....	....	1,050	6,000	1,010	4,400	970	3,000	935	2,200	900	1,900	865	1,500	835	1,300
14	....	....	1,015	3,300	980	2,500	945	1,900	910	1,350	870	1,000	840	890	810	700
15	1,030	2,600	985	2,000	950	1,500	920	1,200	885	850	845	600	810	460	780	350
16	1,000	1,600	955	1,200	925	950	890	700	860	540	820	380	785	280	750	190
17	970	1,000	930	770	895	600	860	420	830	350	790	230	760	180	725	....
18	940	670	905	510	870	400	835	290	800	210	765	150	735	....	705	....
19	915	460	880	370	845	280	810	200	775	150	740	....	710	....	680	....
20	890	340	855	250	820	190	785	140	750	....	720	....	690	....	....	....
21	860	225	825	170	795	135	760	....	725	....	695	....	....	....	....	....
22	835	175	800	130	770	....	735	....	705	....	....	....	....	....	....	....
23	810	125	775	....	745	....	710	....	....	....	....	....	....	....	....	....
24	785	....	750	....	720	....	....	....	....	....	....	....	....	....	....	....
25	760	....	725	....	....	....	....	....	....	....	....	....	....	....	....	....
26	735	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

CO
DA
LA
RA

XUM

STEP BY STEP...

service by service . . . Core Lab has revealed the presence of more oil than any other agency in the world . . . and has pioneered the advancement of techniques by which a maximum amount of that oil can be recovered

CORE LAB

PETROLEUM RESERVOIR ENGINEERING

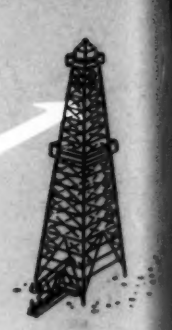
CORE LABORATORIES, INC. ● DALLAS, TEXAS

DALLAS HOUSTON CORPUS CHRISTI SHREVEPORT TYLER
LAFAYETTE NATCHEZ OKLAHOMA CITY DENVER MIDLAND ABILENE
RANGELY WORLAND BAKERSFIELD CANADA VENEZUELA

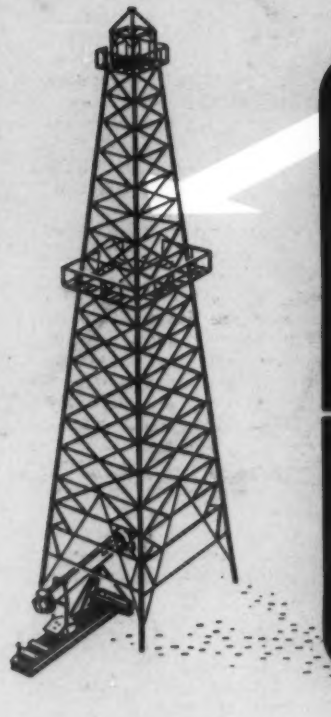
"From discovery to maximum recovery."

XUM

BLACK MAGIC pumps $109,096 additional profit out of identical well...



160 FEET



RESERVOIR DATA is the same:	STARCH BASE WELL	BLACK MAGIC WELL
Completion date	9/1/46	9/25/46
Sand thickness	450'	450'
Static pressure (p.s.i.)	520	520
Gas-Oil ratio	500	500
Tubing size	3"	3"
Liner perforation (mesh slots)	50 & 60	50 & 60
Pump capacity (B/D)	400	400
API gravity	23.6°	23.6°
PRODUCTION DATA differs:		
Initial productivity index	1.24	1.93
Initial production (B/D)	275	385
Rate as of 1/1/50 (B/D)	150	200
Cumulative production to 1/1/50 (Bbls.)	260,421	314,969
Additional barrels to date		**54,548**

The size of these two wells, drilled with bottoms only 160 feet apart in the Wilmington field in California, is especially significant because one was completed with a starch-base, clay-water mud while the other was completed with Black Magic oil base drilling fluid. Their correlative electric logs, porosities and permeabilities are identical. The same stratographic interval is open in each well. Both wells are and have been produced at capacity. They differ only in the muds used during completion. Their production figures speak for themselves. In three years and three months, Black Magic has outproduced its rival by 54,548 barrels. Using $2 as an average price per barrel, the additional profit realized is $109,096.

What happened here has happened hundreds of times elsewhere. Water in the producing zone causes costly, permanent damage, and not until an offset is completed with Black Magic is the full potential of the reservoir realized. With a filtrate loss of zero, Black Magic cannot and will not mud off or water block the formation. It deposits a paper-thin mud cake that readily disintegrates when crude oil displaces it just prior to allowing the well to come on production; usually without swabbing, washing of perforations or waiting for the well to clean itself; thus assuring the highest return permeability possible. Why take chances on water blocking and mudding off your production? Insist on Black Magic.

Write for free copy of the Black Magic Handbook containing valuable information to help you get more production and greater profits.

OIL BASE, INC., 130 Oris Street, Compton, Calif.
Bakersfield • Long Beach • Ventura • Houston
EXPORT: Elmer R. Smith, Caracas, Venezuela; G. Saavedra E. Hijos, S. de R.L. Mexico, D.F.

BLACK MAGIC is represented east of California by:
CORE LABORATORIES, INC. Dallas, Texas
Houston, Corpus Christi, Shreveport, Tyler, Lafayette, Natchez, Oklahoma City, Denver, Midland, Abilene, Rangely, Worland, Calgary, Edmonton

CORE LAB
PETROLEUM RESERVOIR ENGINEERING

XUM

Core Data

THE volumetric equation for calculating oil in place is:

$$\text{Stock-tank barrels in place} = 7{,}758\ Ah\ \Phi\ S_o\ (1/\beta)$$

in which equation, A is the reservoir areal extent in acres, h is the reservoir thickness in feet, S_o is the oil saturation, Φ is the porosity, and β is the formation volume factor.

It is common practice to evaluate the reservoir thickness in terms of feet of "net pay." This connotes that portion of the reservoir believed to be commercially productive.

The choices of commercially productive portions of the reservoir are usually arbitrary. Most evaluation engineers recognize lower limits of permeability and porosity below which the formation is said to be nonproductive. The choice of such limits is usually a result of experience, and consequently may often be basically in error.

The present discussion illustrates the use of core data for such purposes, particularly where experience is lacking.

The choice of lower limits of porosity and permeability will depend upon such individual characteristics as the total reservoir volume, the total range of permeability and porosity values, and the distribution of the permeability and porosity values. The important quantities to consider in choosing limits are relative values of porosity and permeability capacities rather than absolute values.

To emphasize these points consider the following hypothetical situations:

1. Forty-five feet of 10 per cent porosity pay contributes as much to total capacity as 15 ft. of 30 per cent porosity pay and in considering the whole each is equally important and neither could be excluded.

2. Twenty feet of 5 per cent porosity would contribute only 10 per cent of the total capacity in a system with both the above 10 per cent and 30 per cent porosity intervals and might justifiably be ignored, but the same footage of 5 per cent porosity would contribute almost 20 per cent of the total capacity in a system with the 10 per cent porosity alone.

It appears, therefore, that a sound basis for finding a proper lower limit for calculating net pay would be gained from an examination of the distribution of capacity in the formation. Such distributions have been presented in Engineering Fundamentals Nos. 402-408 in different forms.

Figs. 1 and 2[1] illustrate such calculations made from the core data available on a producing reservoir. To construct these graphs the porosity and permeability values from all core analyses for the entire reservoir were listed in order of decreasing values. Capacity values were then computed for each value by multiplying by the proper footages, which were taken as 1 ft. per sample unless accompanying data indicated otherwise. The capacity values were then added cumulatively from the highest porosity and permeability values downward. Finally, the cumulative capacity values were divided by the total cumulative capacity for all samples in order to convert to a fraction or percentage. These fractions were plotted against the individual values of porosity and permeability as shown in the figures.

Table 1 illustrates the tabulation for permeability without listing all values of core data.

From these figures it is seen that a reasonable lower limit of permeability for calculating net pay is 50 md., and that a reasonable lower limit for porosity is 6 per cent. The per cent capacity ignored by choosing these two limits is 2.5 in both cases.

It does not necessarily follow that anything with less than 6 per cent porosity would also be below 50 md. permeability. A proper exclusion of footages would be those below either the permeability limit or the porosity limit.

Reference

1. Folger, Frank, M.S. Thesis, University of Oklahoma, 1949.

TABLE 1—ILLUSTRATING CALCULATION OF FIG. 1

Permeability (md.)	Footage	Capacity = kh	Capacity cumulative	Per cent cumulative capacity
2,900	1	2,900	2,900	19.7
1,390	1	1,390	4,290	29.1
1,240	1	1,240	5,530	37.6
1,010	1	1,010	6,540	44.4
675	1	675	7,215	49.0
0.7	1	0.7	14,720.1	99.97
0.6	3	1.8	14,721.9	....
0.5	2	1.0	14,722.9	....
0.2	1	0.2	14,723.1	100.00

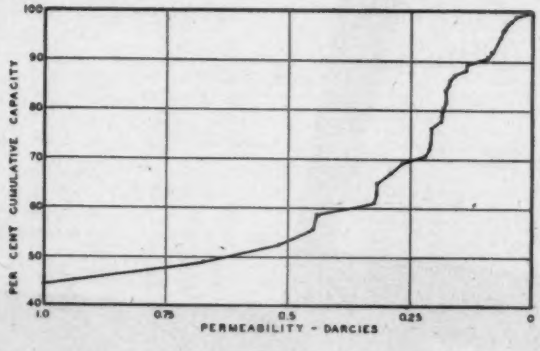


Fig. 1

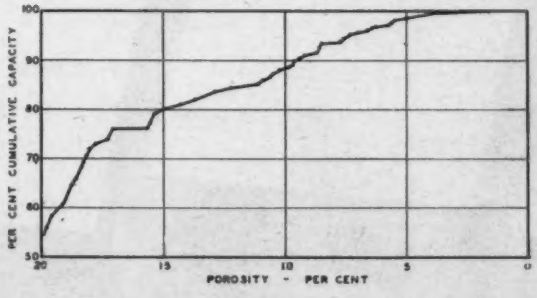


Fig. 2

Series by Dr. John C. Calhoun, Jr., Chairman, Petroleum Engineering School, University of Oklahoma

XUM

Kellogg's unique devices aid in producing special types of process piping

NOT only does Kellogg fabricate virtually any type of process piping from carbon steel to alloy and alloy-lined, but it also rolls, welds and forms it from plate in sizes beyond those readily available from tube mills.

When it comes to fabricating and bending, size is limited only by what can be shipped. One-piece bends up to 96-inch diameter are made on an exclusive bender. Larger diameter bends are made from welded segments. Small diameters are handled on regular bending tables and fabricated into sub-assemblies to minimize field labor. Another unique machine produces quality corrugated pipe for expansion bends.

If you are in the market for process piping of any kind, look to Kellogg!

Exclusive!!! One-Piece Giant Bends

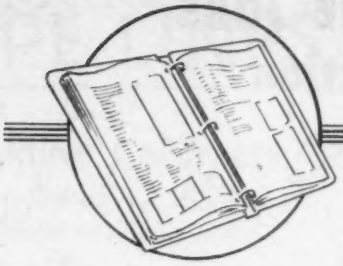
If you require smooth interior contour on piping larger than 36 inches, it will pay you to investigate the advantages of Kellogg's *one-piece giant bends.*

To master temperature and pressure use

M. W. KELLOGG

piping and process equipment

The M. W. Kellogg Company, Inc. (A Subsidiary of Pullman Incorporated)—Offices in New York, Jersey City, Buffalo, Los Angeles, Tulsa, Houston, Toronto, London and Paris



THE REFINER'S notebook

Controller Characteristics

TWO-POSITION, proportional (throttling), and floating modes of controller have been defined previously (see installment 10 in current series of Refiner's Notebook—March 9, 1950). In pneumatic on-off or two-position control the controller has a narrow throttling range. The air relay acts either to bleed the air completely or to bleed none of it so that output pressure is either zero or 15 psi. (assuming 15-psi. supply air pressure).

Proportional-Plus-Reset

Throttling or proportional controllers act to bleed a greater or lesser amount of air so that the controller output pressure to the valve power unit varies in proportion to the deviation of the controlled variable from the control point. Proportional control results in a sustained shift of the value of the controlled variable from the control point when the load changes. For this reason floating action is often used together with the proportional mode of control to obtain proportional-plus-reset control (also known as proportional reset action or reset response). While floating action, by itself, is unsuitable for control since it would result in cycling in most applications, it is useful in that it makes possible different valve positions at the same set point while offset is eliminated. Through floating action the rate of change of valve position takes place in proportion to the shift of the controlled variable.

Set Point and Control Point

In applying automatic control to a process the engineer selects a **desired value** for the controlled variable which the controller is to maintain. Using a proportional controller a mechanical adjustment is made for the **set point.** (This set point may be made for the value of the controlled variable corresponding to the midpoint of the controller qutput pressure range). The **control point** is that value of the controlled variable which the controller acts to maintain at any given instant. With the proportional controller adjusted at a given set point the action under a sustained change in process load is to shift the inner valve to a new position as called for by the controller. When this happens the value of the controlled variable shifts away from the original set point and control action takes place around the new control point. This sustained shift or difference between the value of the controlled variable at the set point and at the control point is termed **offset** or droop.

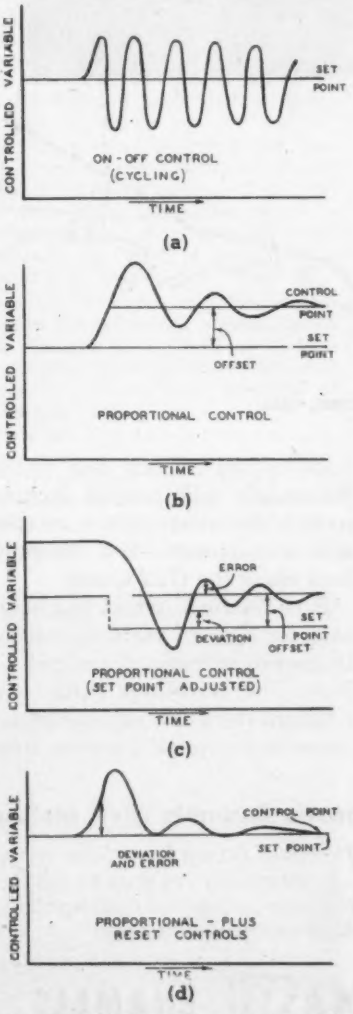


Fig. 1—Controller characteristics under sustained process load.

The difference between the value of the controlled variable corresponding to the set point and a given instantaneous value is termed **deviation.** The difference between the desired value of the controlled variable and a given instantaneous value is termed **error.** Fig. 1 illustrates controller action with different modes of control. In (a) cycling with constant amplitude, as in two-position controller action, is indicated. The action of a proportional-position controller is indicated in (b) under sustained-load change. Here the set point was initially adjusted at the desired value. Acting to correct for the change in process load the controller positions the value so that the controlled variable is at the new control point. In (c) an adjustment has been made for a new set point so that this coincides with the desired value.

In (d) the action of a proportional-plus-reset controller is shown. The set point is initially adjusted to the desired value. Through the floating action employed together with the proportional mode the set point and control point are made to coincide.

No. 26 in current series. The Refiner's Notebook has been published continuously since 1944

XUM

ONE OF 1950's BIGGEST PIPE-LINE JOBS
gets Bitumastic's lasting protection

Cleaning and priming of the huge Transcontinental line takes place at one of the hundreds of stream crossings along its 1,840-mile route. The complete line was designed and constructed by Fish Constructors, Inc., Houston, Texas.

● By late Fall, the 1,840-mile line being laid by the Transcontinental Gas Pipe Line Corporation will be supplying natural gas to the Philadelphia—New York—New Jersey area.

And, like many of the country's other big pipe-line projects, it will be protected against corrosion by Koppers Bitumastic® Enamel for many miles of its length. Portions of the 30-inch line which Bitumastic will protect include some of the most highly corrosive soils encountered—low, swampy land along the Gulf Coast.

Bitumastic Enamel has been used for over 25 years in coating thousands of miles of gas and oil lines. The knowledge gained by Koppers from the experience on these many successful applications can prove to be of value on your next pipe-line job.

Put "Koppers Bitumastic Enamel" into the specifications of your next job. You'll be getting a coating that has proved itself by years of satisfactory service under the most extreme corrosive conditions . . . in all types of soil . . . under variations of temperature.

Why Bitumastic Enamels give lasting protection

Processed from a base of coal-tar pitch, they are impervious to moisture . . . chemically resistant to soil elements. They make a tight bond with the pipe . . . do not disintegrate with age . . . maintain continuously high electrical resistance.

KOPPERS BITUMASTIC ENAMELS
REG. U.S. PAT. OFF.

KOPPERS COMPANY, INC., Tar Products Division, Dept. 603T, Pittsburgh 19, Pa.

PIPE LINES

Trunkline Contracts

Work let on 1,238 miles of Texas-to-Illinois line

HOUSTON.—Trunkline Gas Supply Co. has let contracts for a total of 1,238 miles of line in connection with its Texas-to-Illinois natural-gas project, which was approved recently by the Federal Power Commission.

The line will run 1,219 miles from McAllen, Tex., to Tuscola, Ill., and will be constructed of 10-to-26-in. pipe.

Contracts let are as follows:

Section A, main line: 176 miles of 26-in., from Longville to Darnell, La., Houston Contracting Co.

Section I, lateral line: 33 miles of 20-in., 18 miles of 16-in., and 8 miles of 10-in. from Longville, La., south, Houston Contracting Co.

Section B, main line: 180 miles of 26-in., from Darnell, La., to Senatobia, Miss., Anderson Bros. Corp.

Sections G and H, lateral line: 217 miles of 24-in. from Longville, La., to Altair, Tex., Anderson Bros. Corp.

Section C, main line: 184 miles of 26-in. from Senatobia, Miss., to Joppa, Ill., R. H. Fulton & Co.

Sections E and F, lateral lines: 262 miles of 20-in. from McAllen to Altair, Tex., R. H. Fulton & Co.

Section D, main line: 186 miles of 26-in. from Joppa to Tuscola, Ill., Mahoney Contracting Co.

Trunkline Gas Supply Co. is 60 per cent owned by Panhandle Eastern Pipe Line Co. Hy Byrd, a Panhandle Eastern director, is head of the Houston office.

Trunkline, together with Panhandle Eastern, will spend about $120,000,000 in transporting Texas gas to markets in the Midwest and Canada. The big-inch line, due to be completed in October, 1951, will have a daily capacity of 250 million cubic feet.

Radio Facilities Sought

WASHINGTON. — Montana-Dakota Utilities Co., Minneapolis, has asked the Federal Power Commission to authorize installation and operation of radio facilities which would provide communication with mobile units along the route of a natural-gas pipe line which is now being built in Montana and Wyoming.

FPC authorized the line last December, and it is now being constructed by Montana-Wyoming Gas Pipe Line Co., Minneapolis, for lease to Montana-Dakota. This line will extend from the Worland gas field in Wyoming to near Baker, Mont.

Cost of the radio facilities would be about $82,478, and the installations would include 14 stations at various points along the route of the line, and 12 mobile stations, to be installed in trucks and cars.

There are few line communications in the sparsely settled area in which the pipe is being laid, and the company states it is essential that communication with mobile units along its route be provided.

Wrapping operations on one of the last spreads of the 588-mile, 8-in. products line of Salt Lake Pipe Line Co. between Salt Lake City and Pasco, Wash. The line is already in service to Boise, Idaho, and is scheduled for completion in August.

"Everything for the Pipeliner"

PIPE COATING and WRAPPING MACHINES
Stationary and Line Traveling

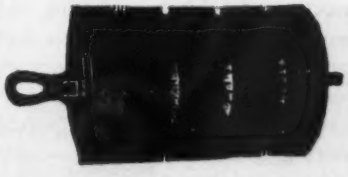
PIPE CLEANING and PRIMING MACHINES
Stationary and Line Traveling

American Steel Works
HEATING KETTLES

PIPE LINE SUPPLIES AND EQUIPMENT

PERRAULT Brothers
1130 NORTH BOSTON
TULSA 6, OKLAHOMA
Phone 5-1104
EXPORT OFFICE: 30 ROCKEFELLER PLAZA
PHONE CIRCLE 6-2675 • NEW YORK, N. Y.

MOLE
Pipeline
Cleaner



For BETTER cleaning of
CRUDE LINES
PRODUCT LINES
NATURAL GAS LINES

FOR DETAILS WRITE

Pipeline Cleaners Co.
Fort Madison, Iowa

XUM

PIPE CUTTING AND BEVELING

Crose pipe cutting and beveling machine for fast true cutting and beveling of pipe. Available in six sizes for 4" to 36" pipe. All machines are built of high strength, light weight aluminum alloys. The continuous ring which goes around the pipe is hinged so that these machines may be installed as easily from the side of the pipe as from the end. Machines for 16" pipe and above have "Out-of-Round" attachment as standard equipment.

WRITE FOR BULLETIN BM-1001

M. J.

CROSE

MANUFACTURING CO., INC.

2715 Dawson Road Tulsa, Okla.

Mayors Urge Line O.K.

BOSTON.—The mayors of two Massachusetts cities are urging prompt and favorable action by the Federal Power Commission on the application of Algonquin Gas Transmission Co. for permission to construct natural-gas facilities in New England. The request is now pending before FPC.

John M. Lynch, mayor of Somerville, appeared before FPC Examiner Glen R. Law at hearings here last week and said: "It is our belief that a supply of natural gas for our city will bring benefits to gas users in the form of lower rates, made possible as a result of the lower cost of this fuel."

Mayor A. B. Holstrom of Worcester urged, in a letter to the presiding examiner, asked that favorable action be taken on the Algonquin application.

"Introduction of this facility to this area as projected solely by the Algonquin company by virtue of its pending application would benefit not only the household users or gas, but also industrial users, who figure largely in the economic welfare of this city and its environs."

Algonquin's proposed project would cost an estimated $33,217,000. The transmission system would include a main 254-mile line extending from a point of connection with Texas Eastern Transmission Corp.'s facilities near Lambertville, N. J., to a point in the Boston area; 364 miles of laterals; and compressor stations. Initial delivery capacity would be approximately 260,000,000 cu. ft. per day *(The Oil and Gas Journal, May 25, 1950, page 175).*

T.G.T. Motions Denied

WASHINGTON.—The Federal Power Commission has denied two motions to separate from consolidated proceedings, now in progress, the portion of Tennessee Gas Transmission Co.'s application relating to the proposed increase in natural-gas capacity of the firm's pipe-line facilities west of Albany.

Tennessee Gas is proposing in its application to extend its system from the eastern terminus of its authorized Kentucky-to-Buffalo natural-gas line in Erie County, New York, to a point on the New York-Massachusetts line.

The company's over-all application seeks FPC authority to expand the capacity of its pipe-line system by 250,000,000 cu. ft. daily, to a daily total of 1,310,000,000 cu. ft. Approximately 156,000,000 cu. ft. of this proposed increase is destined for the Northeastern Gas Transmission Co., for service in the New England area.

Motions to sever were filed by T.G.T. and Inland Gas Corp., Ashland, Ky., one of the firms which would receive part of T.G.T.'s proposed increase.

Fly THE ROUTE OF THE STARLINERS with the COWGIRL HOSTESS

Serving

Alpine Beaumont
Beeville
Brownsville
Brownwood
Carrizo Springs
Coleman
Crystal City
Dallas Del Rio
Eagle Pass
Edinburg El Paso
Fort Stockton
Fort Worth
Galveston
Harlingen
Houston Laredo
Lufkin Marfa
Mission McAllen
McCamey
Port Arthur
San Angelo
San Antonio
Uvalde Victoria

Always Use Air Mail • Ship Via Air Parcel Post • Air Express • Air Freight

FOR RESERVATIONS PHONE

TRANS-TEXAS AIRWAYS
OR CALL YOUR TRAVEL AGENT
General Offices—Houston, Texas

S. E. HUEY & CO.
ENGINEERS & SURVEYORS
OUACHITA BANK BLDG.
MONROE, LA.

SURVEYING & MAPPING

PIPE LINE SURVEYS

WALES TRUCKING CO.

Oil Field Hauling Specialists in

STATES 20 STATES

DALLAS, TEXAS — 319 Forest Ave. Rd. Call Y2-3167
OKLAHOMA CITY, OKLA.—3300 S. High St. Call 65409
TULSA, OKLAHOMA — Call 95495
CHASE, KANSAS — Call 22

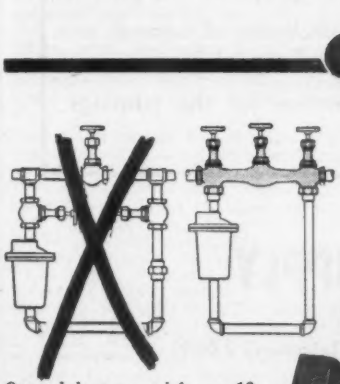
In power or process piping, you'll

SAVE

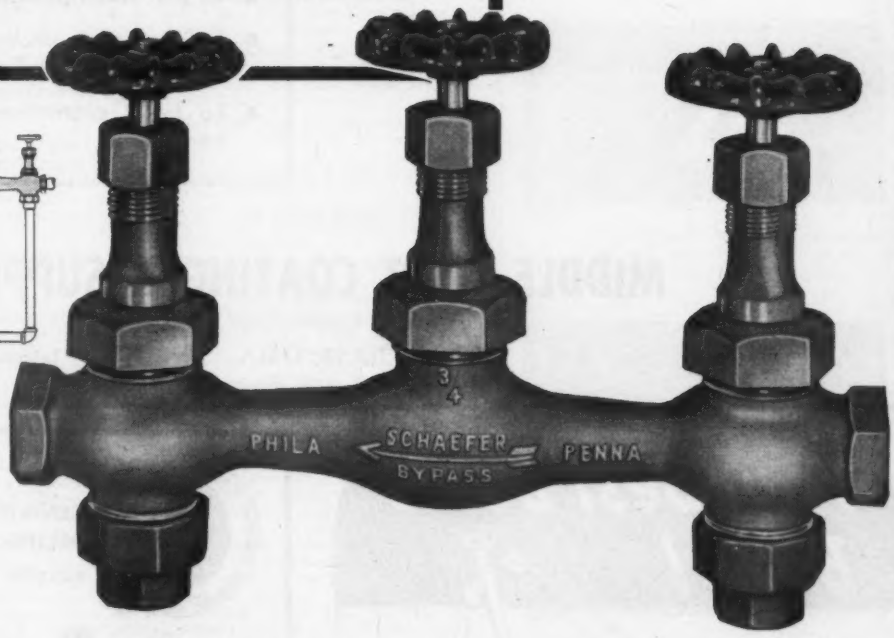
WITH THE

money
space
maintenance
weight
time

HONEYWELL BYPASS



Outmoded set-up at left uses 18 threaded joints . . . Honeywell Bypass uses only eight.



THE Honeywell Bypass is a completely assembled and ready-to-use unit . . . compact and convenient. It eliminates from eight to fourteen threaded joints . . . with the usual leakage and maintenance . . . and affords continuous, trouble-free operation.

Yet it costs no more than the assortment of valves, nipples, fittings, unions and pipes (plus the cutting, threading and assembling) that you may be using now. The Honeywell Bypass is available in Bronze, Iron and Steel . . . for pressures up to 300 lbs. . . . with screwed or flanged ends.

Call in your local Honeywell engineer for detailed information on this bypass and such other Honeywell products as: Hi-Lift Hand Control Valves, Transfer Valves, Low Lift Diaphragm Control Valves, Liquid Level Devices and Steam-Jacketed Rotary Cocks.

COMMERCIAL • RESIDENTIAL • INDUSTRIAL
WORLD'S LARGEST ORGANIZATION FOR ADVANCED INSTRUMENTATION AND CONTROL

Write, today, for a copy of Bulletin #254-1

MINNEAPOLIS-HONEYWELL REGULATOR CO.
INDUSTRIAL DIVISION
1906 Windrim Avenue
Philadelphia 44, Pa.
Offices in 77 principal cities of the United States, Canada and throughout the world

MINNEAPOLIS
Honeywell
VALVE PRODUCTS

XUM

Kick Corrosion Off Your Payroll . . . . .
with GAMA Asbestos Pipe Line Felt

A strong asbestos felt made of quality materials to meet the exacting requirements of pipe line service.

Because Gama Felt is made of high purity asbestos, it provides the best possible protection for long pipe line life.

"the felt with a future"

GAMA ASBESTOS PIPE LINE FELT IS DESIGNED:

- To prevent soil stress on coatings.
- To prevent backfill damage.
- To pull coatings tightly to the pipe.
- To give even thickness of enamel on bottom, sides, and top of pipe.
- To be a protection for the coatings beneath it.

DISTRIBUTED BY:

MIDDLE WEST COATING & SUPPLY

Write for Literature and Prices

207-A Daniel Bldg. TULSA, OKLA. Telephone 2-0865

Your Best Bet is BOYD!

for the Pipeliner

- PARSONS Wheel Trenchliners
- SCHRAMM Air Compressors
- BUCYRUS-ERIE Angle Dozers
- INTERNATIONAL TracTractors
- SUPERIOR Cardwell Sidebooms
- KOEHRING Backhoes, Draglines

CLARENCE L. BOYD CO.

303 So. Frankfort • Phone 8191

TULSA, OKLAHOMA

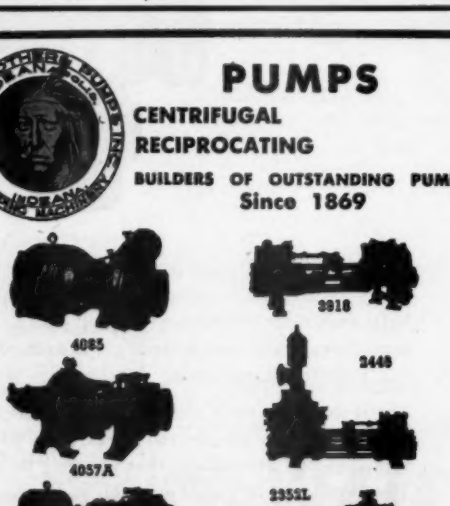
PUMPS

CENTRIFUGAL

RECIPROCATING

BUILDERS OF OUTSTANDING PUMPS

Since 1869



ESTABLISHED 1869

DEAN BROTHERS PUMPS INC.

INDIANAPOLIS IND.

323 W TENTH ST.

Pipe-Line Construction

FOLLOWING is a tabulation of domestic pipe-line projects which are planned or under construction. Included are crude-oil, products, and natural-gas lines. The list was compiled from surveys made by The Oil and Gas Journal.

Crude-Oil Pipe Lines

Humble Pipe Line Co.—371 miles, 18-in., under way, West Texas-Satsuma Station to Baytown, Tex.; 178-mile western section contracted to Morrison Construction Co.

30 miles, 8-in., Runnels and Coke counties, Texas, planned.

Lakehead Pipe Line Co.—320 miles, 18-in., Neche, N. D., to Superior, Wis.; Anderson Brothers Corp., contractor. K. B. Killingsworth, Pembina, N. D., Earl Saulsman, Clearbrook, Minn., and J. D. Jackquemine, Bemidji, Minn., spreadmen. Under construction.

Magnolia Petroleum Co.—60 miles 4-24-in. gathering system in La Ward and Lolita fields, Texas; Henry L. Lemons & Co., contractor; W. A. Remington in charge.

Mid-Valley Pipe Line Co. (Sun and Sohio)—1,000 miles, 20-22-in., under way, Longview, Tex., to Mayersville, Miss.-Covington, Ky., to Lima, Ohio. Contracts let for 857 miles as follows: Section 2, Haynesville, La., to Mayersville, Miss., completed. Section 3-A Mayersville to Oakland, Miss., Associated Pipe Line Contractors, Inc.; J. A. Williams and L. H. Gray, spreadmen; field office, Charleston, Miss.; Section 3-B 4-A, Oakland, Miss., to Henderson, Tenn., Houston Contracting Co., E. C. Norris, superintendent; field office, Batesville, Miss.; Section 4-B, 5-A, Henderson to Clarksville, Tenn., Eastern Construction Co.; work started April 1; to be completed by September 1, 1950. Louie Stewart and Cliff Simmons, spreadmen; field offices, Clarksville and Lexington, Tenn. Section 5-B, 6-A, Clarksville, Tenn., to Elizabethtown, Ky., field office, Clarksville, Fred L. Byers, superintendent; Britton Construction Co.; Section 6-B, 111 miles of 22-in., Elizabethtown to Hebron, Ky., H. L. Gentry Construction Co., Frank Morris and Jim Mitchell, spreadmen; field office, Warsaw, Ky., Section 7 South, Hebron, Ky., to Eaton, Ohio, Britton Construction Co., field office, Hamilton, Ohio; spreadman, Fred Peters; Section 7 North, Eaton to Lima, Ohio; Section 8, Magnolia, Ark., to Haynesville, La. Longview, Tex.-Haynesville, La., section, 110 miles 20-in., contracted to O. R. Burden Construction Co.; G. A. Lewis, spreadman; office, Marshall, Tex.

Cumberland and Tennessee rivers, Eastern Construction Co.; field office, Clarksville, Tenn., Fred L. Byers, spreadman.

41 miles, 20-in., Haynesville, La., to Red River near Benton La.; Latex Construction Co., contractor; H. L. Leake, superintendent; headquarters, Cotton Valley, La. W. A. Briley, assistant superintendent; Sam B. Harrison, office manager.

Naph-Sol Refining Co.—25 miles 6-in., under construction, Kimball Lake oil field, Newaygo County, Michigan, to refinery at Muskegon; Young Construction Co., Olney, Ill., contractor.

Pan American Pipe Line Co.—80 miles, 10-in., southern part of Scurry County, Texas, to connect with Humble Pipe Line Co.'s system near San Angelo, Tex. Brown & Root, contractor.

Pelican Oil Co.—60 miles, 6-in., Lake Charles, La., area; Anderson Brothers Corp., contractor; field office, De Quincy, La.; R. W. Jernigan, spreadman. Under construction.

Phillips Petroleum Co.—45 miles 2-24-in., gathering system near Andrews, Tex.; Vaughn & Taylor Construction Co., contractor; Jess Moore in charge.

281 miles 10-in., planned, Borger, Tex., to Yale, Okla.

Pasotex Pipe Line Co.—32 miles 4-8-in., authorized, North Snyder, Tex., lines for gathering, delivery to Basin System.

Portland Pipe Line Co., Montreal Pipe Line Co., Ltd.—236 miles, 18-in., planned, Portland, Me., to Montreal, Que., Canada, contracted as follows: Oklahoma Contracting Co., 85 miles in Section 1 at southern end; Portland, Me., to Gorham, N. H.; H. A. Wylie, superintendent; Lisle W. Chambers, paymaster; office, Barton, Vt.; work starts June 1. Associated Pipeline Contractors, Inc.; L. H. Gray, spreadman. Section 2, 81 miles; and Fred Mannix Co., Ltd., 68 miles, Section 3, in Canada.

Richfield Oil Corp.—40 miles, 10-in., Cuyama Valley-Newhall, Calif., planned. 60 miles, 14-in., applying field joints, Newhall-Wilmington, Calif., under way.

Stanolind Pipe Line Co.—36 miles, in Kent County, Texas, outlet for Scurry County crude.

Texas-Empire Pipe Line Co.—42 miles, 16-in., authorized, Wilmington, Ill., to East Chicago, Ind.; O. E. Burden Construction Co., contractor; Pete Hiner, spreadman; office, Wilmington, Ill.

Texas Pipe Line Co.—42 miles 12¾-in., Patoka, Ill., to Clay City, Ill.; L. R. Young Construction Co., contractor; field office, Flora, Ill.; Whity Ralph, spreadman.

Texas-New Mexico Pipe Line Co.—37 miles, 10-in., proposed, Scurry County, Texas.

Products Pipe Lines

Great Lakes Pipe Line Co.—261 miles, 12-in., under way; contracted as follows: 52 miles, 15-in., Albert Lea to Fairbault, Minn.; under construction; Sheehan Pipe Line Construction Co., contractor; field office, Albert Lea, Minn.; C. W. Henderson, spreadman. 50 miles 12-in., St. Paul to Fairbault, Minn.; J. W. Brown, spreadman; office, Northfield, Minn. 50 miles 12-in., State Line to Fairbault, Minn., C. M. Brown, spreadman; office, Albert Lea, Minn. O. R. Burden Construction Co., 64 miles north from Des Moines; field office, Nevada, Iowa; G. D. Lewis, spreadman; A. C. Holder Construction Co., 72 miles to Iowa-Minnesota state line; Williams Brothers Corp., 20 miles, Mississippi River crossing and line to terminal and station. Kansas and Missouri river crossings, R. H. Fulton & Co.; field office, Kansas City; Ed Veach, spreadman.

Second 12-in. line to be constructed between Barnsdall, Okla., and Kansas City, Kans., paralleling the 12-in. recently completed, and three existing 8-in. lines. Work to start as soon as pipe is delivered.

47 miles, 12-in., Atchison, Kans.,-Fall City, Neb.; Midwestern Constructors, Inc., contractor; field office, Falls City. This firm has following contracts, also: 47 miles, 12-in., Falls City to Nebraska City; field office, Nebraska City; and 48 miles, 12-in., Nebraska City to Omaha; field office, Plattsmouth, Neb.

290 miles, 12-in., Tulsa to Kansas City, Mo. Contracted as follows: 54 miles, Ponca City to Barnsdall, Okla., O. R. Burden Construction Co.; and 236 miles, Barnsdall, Okla.-Kansas City, Mo., Pacific Pipe Line & Engineers, Ltd. James Howe, superintendent for Pacific Pipe Line portion is headquartered at Chanute, Kans.; spread office at Tulsa with Ham Hamilton general spreadman and river-crossing spreadman; spread office at Dewey, Okla., Loue Robertson, spreadman; and spread office at Paola, Kans., Larry Webb, spreadman.

355 miles, 12-in., authorized, Kansas City through Omaha and Sioux City, Iowa, to Sioux Falls, S. D.

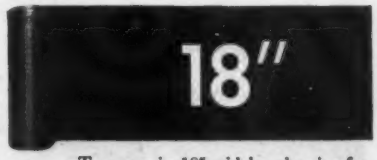
189 miles, 12-in., authorized, Kansas City

TAPECOAT*

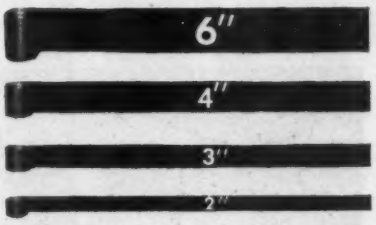
The Time-Tested Coal Tar Coating in Handy Tape Form

...Sized to the Job

Tapecoat in 24" width is the economical coal tar coating for "cigarette-wrapping" mechanical couplings.



Tapecoat in 18" width—the size for "cigarette-wrapping" sleeves, large pipe bends and joints on large diameter pipe.



Tapecoat in 6", 4", 3" and 2" widths—ideal for spiral-wrapping welded field joints, service connections, pipe under streets and sidewalks, and pipe through building walls, etc.

Write for full details and prices on Tapecoat—the coal tar coating with a width for every purpose.

* Reg. U. S. Pat. Off.

The TAPECOAT Company

1523 Lyons Street, Evanston, Illinois

489 Fifth Avenue, New York 17, N.Y.; Jas. E. Mavor Co., 514 M and M Building, Houston 2, Texas; 175 Niagara Street, Denver 7, Colo.

XUM

NOW! NEW SIZES!
Aluminum Covered
BUTLER Steel Buildings

This Butler Building, with lightweight, sturdy, reflective aluminum covering, is used as oil company reclamation shop at Tulsa, Okla.

Permanent, fire-safe shelter for loading pumps, provided by Butler Building at Wichita Falls, Tex.

Now Available . . . new sizes, for a complete range of widths, 6′ to 60′. Standardized steel buildings with these outstanding advantages of Butler Aluminum Covering: has high reflectivity for insulation against summer heat, winter cold; requires little maintenance . . . gives longer-lasting service; makes a lightweight structure, yet assures sturdy, durable construction; can be easily taken down and re-erected. And get these other big Butler advantages: rigid-frame, truss-clear design; low cost, fire-safe, weathertight. Butler Buildings—proved in oil field use for more than 40 years.

Rigid frame, truss-clear construction gives maximum bulk storage in Tulsa, Okla., oil company warehouse.

BUTLER

BUTLER MANUFACTURING COMPANY

Kansas City, Mo.
Galesburg, Ill.
Richmond, Calif.
Minneapolis, Minn.

MAIL COUPON TODAY

For Prompt Reply, Address Dept. OG26 at Office nearest You
7464 E. 13th St., Kansas City 3E, Mo.
964 6th Ave., S.E., Minneapolis 14, Minn.
Richmond, Calif.

*Send full information about Butler Aluminum Covered Buildings for use at*_____

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

to Des Moines, contracted as follows: 36 miles 12-in., Kansas City, Mo., northward through Platte, Neb.; Trojan Construction Co., contractor; field office, Parkville, Mo.; Swede Tillotson, spreadman; 37½ miles, 12-in. Clay, Clinton, DeKalb, and Daviess counties, Missouri; Trojan Construction Co., contractor; field office, Cameron, Mo.; Felix Johnson, spreadman; Brodie Construction Co., 37-mile middle section; field office, Bethany, Mo.; A. T. Rathjen, spreadman; R. H. Fulton & Co., two 36-mile northern sections, Osceola to Des Moines, Iowa; Jerry Nash, spreadman; office, Osceola.

48 miles, 8-in., authorized, Cushing-Drumright-Tulsa, Okla.; Trojan Construction Co., contractor; field office, Sapulpa, Okla.; Slim Deaver, spreadman.

Phillips Petroleum Co.—155 miles 6-in., extension to present 200-mile line from Phillips, Tex., to LaJunta, Colo., on to Denver.

Standard Oil Co. (Ohio).—38 miles 8-in., authorized, Toledo to Fostoria, Ohio.

Salt Lake Pipe Line Co.—242 miles, 6-8-in., Boise, Idaho-Pasco, Wash., planned. Contracted as follows: Morrison-Knudson Co., Inc., Macco Corp., and Bechtel Corp., 140-mile section from Boise to Baker, Idaho; Pacific Pipeline & Engineers, Ltd., Baker to Pasco, Wash. Pacific Pipeline & Engineers, Ltd.'s, field office, LaGrande, Ore.; L. E. Robertson, spreadman.

63 miles 8-in., Mountain Home to Boise, Idaho; Oklahoma Contracting Corp., contractor; Aldress Kilgore, supt.; R. F. Mueller, paymaster. Office, Mountain Home. Construction under way.

Natural-Gas Pipe Lines

Alabama-Tennessee Natural Gas Co.—80 miles 10-in., under way, Selmer, Tenn., to Muscle Shoals, Ala.; 35 miles 8-in., authorized, Muscle Shoals to Decatur, Ala.

Algonquin Gas Transmission Co.—276 miles, Lambertville, N. J., to Boston area, proposed.

492 miles laterals, New England area, proposed.

Arkansas-Louisiana Gas Co.—69 miles, 20-in., Waskom, Tex., to Magnolia, Ark.; under construction; Anderson Brothers Corp., contractor; Ralph Pitts, spreadman; field office, Plain Dealing, La.

Associated Pipe Line Co.—35 miles, 14½ 8¾-in., in southeastern Missouri, approved.

Atlantic Gulf Gas Co. (United Gas Pipe Line Co.)—1,530 miles, planned, Alabama-Florida-Georgia-South Carolina.

Central Hudson Gas & Electric Corp.—40 miles, authorized, Tuxedo, N. Y., station. Home Gas Co. line now under construction to Poughkeepsie, N. Y. Britton Construction Co., contractor; field office, Newburgh, N. Y.; spreadman, Curley Hahn; R. L. Carlton, office.

Central Kentucky Natural Gas Co.—36 miles, 12-20-in., planned, Kentucky loops.

Chicago District Pipe Line Co.—41 miles, 24-in., planned, Joliet, Ill., to Chicago.

City of Indianapolis, Ind., Inc.—85 miles 16-in., proposed, Indianapolis to Texas Eastern Transmission Corp.'s system.

Cities Service Gas Co.—47 miles, 3-4-16-in planned, in Kansas.

Coastal Pipe Line Co.—1,000 miles, planned, Texas to Norfolk, Va.

Colorado-Wyoming Gas Co.—41 miles, planned, Greeley, LaSalle, and Windsor, Colo., areas. Vaughn & Taylor Construction Co., has contract for 30 miles, 10-in., Mesa to Boulder Junction, Colo.; field office, Derby, Colo.; Don Smith, spreadman.

Commonwealth Natural Gas Corp.—537 miles, 20-in., planned, West Bend, Ky., to Norfolk, Va.

200 miles, authorized, Green County, Virginia, to Norfolk.

East Tennessee Natural Gas Co.—185 miles, 16-in., Lobelville-Chattanooga, Tenn., contracted by Walters & Saigh Construction Co., for construction in 1950; 120 miles, 12-in., Chatanooga-Knoxville, Tenn., contracted by Walter and Saigh Construction Co., for construction in 1950; Robert E. Floyd, spreadman; field offices, Athens and Cleveland, Tenn.; Carl Doyle, general su-

perintendent; James E. Gray, office manager; 100 miles of laterals to be laid in 1950. Construction 150 miles, 16-in., Knoxville-Bristol, Tenn., under consideration.

El Paso Natural Gas Co.—All work done by company crews.

Looping of 26-in., New Mexico-California line and connection with Pacific Gas & Electric Co. at Needles, Calif. 352 miles, 30-in., completion November 1950; spreads as follows: 119 miles 30-in., Wenden to Topock, Ariz., Ed Alsup, spreadman; office, Salome, Ariz.; (Spread No. 2 is shut down due to lack of pipe; office, Jal, N. M., Jack Smith, spreadman); 15 miles 2-in., Bowie, Ariz.; G. George, spreadman.

450 miles, 30-in., under construction. Eunice, N. M.-Blythe, Calif., looping; completion March 1950.

450 miles, 24-in., planned, San Juan basin, New Mexico to Franconia, Ariz.

Home Gas Co.—70 miles, planned, Orange, Sullivan-Rockland counties, New York-Cattaraugus County, New York, areas.

Jersey Central Power & Light Co.—39.4 miles, 10-in., planned, New Jersey to Coast system, Texas Eastern Transmission Co.'s Big Inch.

Michigan-Wisconsin Gas Co.—185 miles 4-14-in. laterals, Milwaukee-Fond du Lac, Sheboygan, and Green Bay, Wis., under construction; C. C. Griffis Construction Co., contractor; Paul Means, superintendent for Lake Del Mort crossing.

Montana-Dakota Utilities Co. and Montana-Wyoming Gas Pipe Line Co.—340 miles, 12¾-in. under way, Worland, Wyo., to Cabin Creek, Mont.; R. A. Conyes Construction Corp., contractor; Al Poggi, general superintendent; Chester Kincaid and Jimmy Alman, spreadmen; field office, Hardin, Mont.

Montana Power Co.—83 miles, 12¾-in., planned, Butte to Bozeman, Mont.; field office, Three Forks, Mont.; C. N. Deaton, spreadman.

New York State Natural Gas Corp.—53½ miles 16-in., loops, Pennsylvania.

164 miles, 16-in., Ithaca to Albany, N. Y., planned.

70 miles, 20-in., North Oakford storage pool, Pennsylvania, to Ohio State line.

53 miles, 16-in., loops in Pennsylvania, under construction.

56 miles, 20-in., loops in Pennsylvania and New York; under construction.

Northeastern Gas Transmission Co.—511 miles, up to 20-in., planned, in New England area.

Northern Natural Gas Co.—41 miles, 20-in., under construction, Southwest from Garden City, Kans.; R. H. Fulton & Co. contractor.

597 miles of looping in 10 sections, contracted as follows: R. H. Fulton & Co., loops 1 to 5: loop 1, 40.2 miles, 26-in., extending northward from a point 28.7 miles north of Skellytown station in Pampa, Tex., area; loop 2, Beaver, Okla., station, 74.9 miles, 26-in.; loop 3, Mullinville, Kans., station, 83¼ miles, 26-in.; loop 4, Bushton, Kans., station, 72½ miles, 26-in.; loop 5, from a point west fo Garden City, Kans., to Bushton, Kans., station, 155 miles, 20-in M. L. Boyd, spreadman; office, Perryton, Tex.; and N. A. Veach, spreadman; office, Liberal, Kans. Midwestern Constructors, Inc., loops 6 and 7; loop 6 from a point 29 miles northeast of Palmyra, Nebr., station, 43.4 miles, 26-in., to Oakland, Iowa, station; loop 7, from a point 17.8 miles northeast of Oakland, Iowa, station, 65.9 miles, 26-in; office, Glenwood, Iowa. R. B. Potashnick, loops 8 to 10; loop 8, southwestward from Ventura, Iowa, station, 31.2 miles, 26-in.; loop 9, northward from Ventura station, 41 miles, 26-in.; loop 10, from the north end of a 26-mile gap beyond loop 9, where another loop will be built consisting of 39½ miles, 26-in.; total 111 miles, 24-in.; field office to be located at Ogden, Iowa, June 1; Boyd, spreadman.

Northwest Natural Gas Co.—750 miles planned: Washington, Oregon, and Idaho.

Pacific Gas & Electric Co.—506 miles 14-in., under construction, Topock, Ariz.-Milpitas, Calif.; Bechtel-Price-Conyes, contractor; main-line office, Barstow, Calif.; R. L. Bowman, general superintendent.

Panhandle Eastern Pipe Line Co.—160

GENERAL
PIPE LINE
CONTRACTORS

Personal Supervision on Construction of Your

Pipe Lines • Water Lines
Sewer Lines • Excavations
Salt Water Disposals

TROJAN
CONSTRUCTION CO.
INCORPORATED
OKLAHOMA CITY, OKLA.
BOX 4427 • PHONE 2-7696
WAREHOUSE PHONE 6-1430

NEEDS NO SEALING COMPOUND

UNBRAKO
DRYSEAL
THREAD
PRESSURE PLUG

. . . seals pressure-tight without the use of sealing compounds. Features the "Dryseal" Pipe Thread originally developed for use with SO_2, ammonia, and other refrigerants. Offers a valuable solution to leakage problems in high pressure equipment of all kinds.

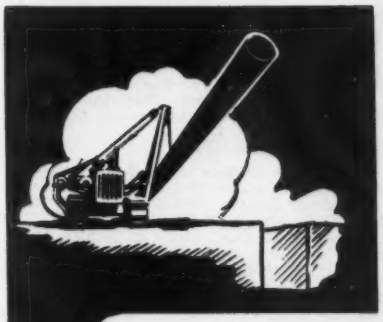
Unique design of the "Dryseal" Thread provides actual crushing and sealing at both major and minor diameters, effectively preventing spiral leakage, even under extreme pressures.

Incorporates all the important features of the regular UNBRAKO Pressure Plug, including fully formed threads, uniform taper and perfect roundness.

A full range of sizes from 1/16" to 1¼", National Pipe Thread Fuel, is available. Full details are given in Bulletin 675.

OVER 47 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.
JENKINTOWN 25, PENNSYLVANIA



OKLAHOMA
CONTRACTING CORP.

•

MERCANTILE BANK BUILDING
DALLAS, TEXAS

•

COMMERCE BUILDING
HOUSTON, TEXAS

A combination of top men and a world of knowledge, gives you the best and most dependable pipeline construction company in the business, Oklahoma Contracting Corporation.

IT'S AN
OK JOB IF
OKLAHOMA CONTRACTING
DOES IT!

XUM

miles, additions to present system; approved. Also, 188 miles to be built in conjunction with the 160-mile project, along entire system. (Previously approved by FPC.)

69 miles 26-in. loops, Olpe to Hugoton, Kans.; Midwestern Constructors, Inc., contractor; office, Ottawa, Kans.; M. L. Wilhite, superintendent.

Panhandle Eastern Pipe Line Co.—356 miles, 26-in., authorized, looping in Texas, Oklahoma, Kansas, Missouri, Illinois, Indiana, Ohio, and Michigan.

75 miles, 26-30-in., loops in Illinois, Indiana, Missouri; Anderson Brothers Corp., contractor; field office, Rockville, Ill.; J. A. Brown, spreadman; office at Winchester, Mo.; Dewey Whitworth, spreadman. Under construction.

Peoples Gas Light & Coke Co.—Planned 42 miles, 24-in., Joliet-Chicago, Ill.

Phillips Petroleum Co.—25 miles gathering system in West Edmond, Okla., field; under construction; Vaughn & Taylor Construction Co., Inc., contractor; spread office Edmond, Okla.

118 miles, 3-to-20-in., gas-gathering system in Sherman and Hansford counties, Texas; Vaughn & Taylor Construction Co., Inc., contractor; D. D. Vaughn, spreadman; field office, Texhoma, Okla.

Phillips Petroleum Co.—118 miles 3-26-in., gas-gathering system, Sherman and Hansford counties, Texas; Vaughan & Taylor Construction Co., Inc., contractor; field office, Texhoma, Okla.; D. D. Vaughn and Jess Moore, spreadmen. Work 60 per cent complete.

Piedmont Natural Gas Corp.—1,350 miles, 20-in., planned, Greenville, Miss., to Norfolk, Va.

Plains Natural Gas Co.—78 miles, gathering system, Oklahoma-Kansas area, Hugoton field. Contracted by: Arey-Phillips Construction Co., Amarillo, Tex.; Tulsa Pipe Coating Co., Mid-Western Constructors, Inc., Engineering and supervision. Latter firm represented by Lyle DeWitt; field office, Liberal, Kans.

Roanoke Pipe Line Co.—30 miles 8-in., Gala, Va., to Roanoke, authorized.

South Jersey Gas Co.—77 miles, planned, Camden to Atlantic City.

Southern California Gas Co.—80 miles 30-in., Whitewater to Puente, Calif., under way; field office, Bonning, Calif.

Southern Natural Gas Co.—Following program approved by FPC (Docket G-1308): scheduled for 1950.—180 miles, 18-in., Gwinville, Miss., to Selma, Ala.; Sheehan Pipe Line Construction Co., contractor; 26 miles, 16-in., Selma to Marvin Gate, Ala.; 29 miles of 12-in., Carthage, Tex., to Logansport, La.; 14 miles, 14-in., Logansport to Perryville, La.; 5.8 miles of 8-in., Carthage field, Texas; 13.2 miles, 24-in., Benton-Pickens loop in Louisiana; 4 miles, 24-in., Coosa-Talladega loop, in Louisiana; 4 miles, 24-in., Tallapoosa-Bowden loop in Louisiana; 11 miles of 6-in., Vicksburg loop in Mississippi; 6.2 miles, 12-in., Macon line loop, in Georgia; and the following connecting lines: 5 miles, 8-in., Meridian, Miss.; 1 mile, 8-in., Demopolis, Ala.; 35 miles, 8-in., La Grange, Ga.; 6.3 miles, 6-in., Lanett, Ala.; 6.2 miles, 8-in., Mississippi Chemicals Co. plant; 22 miles, 8-in., Childersburg, Ala.; 2 miles, 6-in., Beaunit Mills; and 12.6 miles, 12-in., Yates plant.

Scheduled for 1951.—45.6 miles, 18-in., and 22.9 miles, 16in., Selma to Marvin Gate, Ala.; 98.1 miles, 16-in., Marvin Gate to Bolingbroke, Ala.; 105 miles, 10-in., Bolingbroke Gate to Augusta, Ga.; 19 miles, 8-in., Augusta to Aiken, Ga.; 27.2 miles, 14-in., and 36.9 miles, 14-in., Logansport to Perryville, La.; 21.4 miles, 24-in., Perryville-Pioneer loop in Louisiana; 14.4 miles, 24-in., Onward Big Sunflower loop, in Louisiana; and the following connecting lines: 18.8 miles, 6-in., Grandville, Ga.; and 15.5 miles, 4-in., Sandersville, Ga.

Southern Union Gas Co.—78 miles, 8-10-14-in., planned, New Mexico loops and laterals.

Tennessee Gas Transmission Co.—65 miles, 16-in., planned, Ohio-Pittsburgh spur.

40 miles, 16-in., Beaver Falls-Pittsburgh, Pa., Britton Construction Co., contractor; office, Beaver Falls; Fred McKenzie, superintendent.

790 miles, 20-26-in., planned, Burnaugh, Ky., to Boston, including 400-mile line to Buffalo.

992 miles, 30-in., planned, first 150 miles of loops to be laid at Monroe, La., Greenville, Miss., Midland and Portland, Tenn.

385 miles 26-in., Greenup County, Kentucky, to New York; contracted to H. C. Price Co., Bartlesville, Okla.

Latex Construction Co. has following contracts: 123 miles, 30-in., West Monroe to Many, La., W. H. Hayes, superintendent, field office, Jonesboro, La.; 95 miles, 30-in., Natchitoches to Kinder, La.; F. A. Silar, superintendent, W. A. Briley, assistant; field office, Kinder, La. 75 miles, 16-in., Kinder to Bayou Sale, La., F. A. Silar, superintendent.

54.2 miles, 30-in., under construction, White Bluff area to Joelton, Tenn., area, contracted to Morrison Construction Co.

36.1 miles, 30-in., under construction, Glasgow, Ky., area to Joelton area, contracted to Morrison Construction Co.

18.1 miles, 30-in., under construction Union City to Buckeye, Ky., Anderson Brothers Corp., contractors.

47 miles 30-in., Glasgow to Lebanon, Ky.; H. C. Price Co., contractor; field office, Scottsville, Ky.; R. L. McMillon, spreadman.

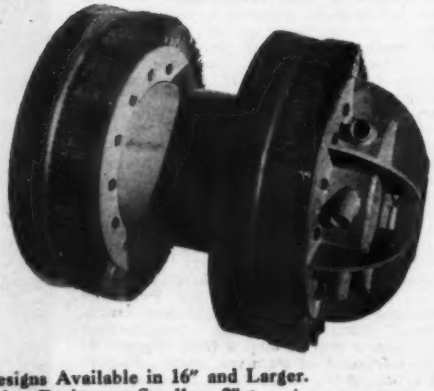
99 miles 30-in., under way, Dickson to Selmer, Tenn.; field office, Dickson, Tenn.; Jack Hodges, spreadman.

63 miles 26-in., Mahoning River near Youngstown, Ohio, southward; H. C. Price Co., contractor; G. A. Reutzel, supt.; field office, Columbiana, Ohio. 63 miles 26-in., Muskingum River northeastward; R. K. Shivel, supt.; office, Zanesville, Ohio; 47 miles 26-in., Muskingum River southwestward; W. B. Williams, supt.; office, McConnelsville, Ohio; 47 miles 26-in., Ohio River northeastward; C. R. Ice, supt.; office, Portsmouth, Ohio. (Balance of 373-mile Ohio River-Buffalo project to be started in August 1950.)

Williamson Gas Line Pigs* Traverse 1½R 90° Bends

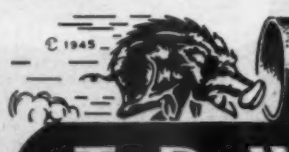
← 24" Size
New Design
TYPE GP PIGS
with Brushes
Mounted on Arched
Springs to
Compensate for
Wear

30" Size →
Standard Design
TYPE RCN-50
with
Jet Rotation
Feature to
Distribute
Wear



*Patents Pending

Above Designs Available in 16" and Larger.
Other Designs as Small as 2".



THE PIG WITH THE POKE
CLEANS PIPE LINES

T. D. Williamson, Inc.
TULSA 9, OKLAHOMA

27.7 miles, 12-in., under construction, El Campo, Tex., to near Traitor, Tex.; Massey Construction Co., contractor.

25 miles, 30-in., Hardeman and McNairy counties, Tennessee; H. C. Price Co.; field office, Selmer, Tenn.; J. A. Reutzel, spreadman.

174 miles, 30-in. loops in western Tennessee and Kentucky; Price-Morrison, contractor; R. L. McMillon, spreadman; office, Scottsville, Ky.; Jack Hodges, spreadman; office, Dickson, Tenn.

103 miles 30 and 26-in. loops, Premont to El Campo, Tex.; Oklahoma Contracting Corp., contractor; M. E. Shiflett, supt.; Joe Freeman, paymaster. Work under way.

60 miles, 30-in., between stations 104 and 99; Anderson Brothers Corp.; field office, Richmond, Ky.; A. G. Hobson, spreadman.

65 miles, 26-in., Station 110 to Ohio River; field office, Moorehead, Ky.; E. C. McCoy, spreadman.

170 miles of 26 and 30-in., contracted by Anderson Brothers Corp., in Kentucky

91 miles 30-in., Holly Springs, Miss., south; contracted to Oklahoma Contracting Corp.; Raymond Law, supt.; Gene Gohring, paymaster; office, Holly Springs; work to begin June 1.

Texas-Eastern Transmission Corp.—1,400 miles planned, Texas to Pittsburgh loops.

108 miles 16-in., authorized, Provident City to Baytown, Tex.

Texas Gas Transmission Corp.—103 miles, 20-in., Carthage, Tex., to near Lisbon, La., (Sharon); under construction; N. A. Saigh Co., Inc., contractor; Carthage, Tex.; Bob Floyd, representative. Construction subcontracted: (1) Fowler Brothers, 43 miles from Carthage to Red River, field office at Carthage; M. C. Johnson, spreadman; (2) 63 miles to Sharon station, Oklahoma Contracting Co. (J. R. Horrigan) field office at Minden, La.; Ed Flanagan, spreadman.

32 miles, planned, Slaughters, Ky., to Evansville, Ind.

Texas Illinois Natural Gas Pipeline Co.—1,400 miles, 30-in., approved, La Gloria field, Texas, to Joliet, Ill.

58-mile, 20-in. lateral, Joliet terminal to connection with Natural Gas Pipeline Co of America near Volo, Ill.

Transcontinental Gas Pipe Line Co.—Texas-New York 1,840 miles, 30-in., main line and 500 miles, 4 to 22-in., gathering line. Section of 605 miles of 30-in. nearing completion.

Section 6, Newman, Ga., to Danielsville, Ga., 108 miles; Williams Brothers Co.; field office, Monroe, Ga.; Thelmer Davis, spreadman. Section 7, Danielsville, Ga., to Saluda River, South Carolina; 86 miles; Williams Brothers Co. Section 8, Saluda River, South Carolina, to Catawba River, North Carolina, 102 miles; R. H. Fulton & Co. Section 9, Catawba River, North Carolina, to North Carolina-Virginia boundary, 100 miles; Clark Williams, spreadman; field office, Spartanburg, S. C. R. H. Fulton & Co.; A. A. Corrigan, supt.; Clark Williams, general supt. Section 10, North Carolina-Virginia boundary to James River, Virginia, 86 miles; O. R. Smith Contracting Corp. Section 11, James River, Virginia, to Potomac River, Virginia; 110 miles; O. R. Smith Contracting Corp. Section 12, Potomac River, Virginia, to Susquehanna River, Pennsylvania, 76 miles; Associated Engineers & Contractors, Inc., spreadman, Cecil Rogers; field office, Towson, Md.; Section 13, Susquehanna, Pennsylvania, to Delaware River, 90 miles; Wunderlich & Griffis Construction Co. Section 14, Delaware River to Hackensack River, New Jersey, 61 miles; Wunderlich & Griffis Construction Co. Section (unnumbered), Hackensack River, New Jersey, to Hudson River, New York, 23 miles; Oklahoma Contracting Co.; field office, Edgewater, N. J.; M. E. Shiflett, spreadman.

616 miles main and gathering lines west and south of Eunice, La. (361.1 miles is for main line and 255 miles for gathering lines.) Contracted as follows:

Schedule A.—Mercedes to south of Falfurrias, Tex., 80.1 miles 10 to 14-in. main line; Massey Pipe Line Construction Co., contractor; work to start in April or May.

Schedule B.—South of Falfurrias to Edna, Tex., 153.1 miles, 24 and 26-in. (H. B. Zachary Co., San Antonio, has contracted laying of 108 miles 24-in. in Schedule B.) Remaining 45 miles yet to be contracted. Work starts September 1.

Schedule C.—Edna to Porters, Tex., 114.9 miles, 26 and 30-in., to start in August. Contract to be announced.

Schedule D.—Porters to Sabine River, 91.5 miles, 30-in., contracted by Texas Southern Contracting Co., Fort Worth,; work to start in July.

Schedule E.—Sabine River to Eunice, La., 81.5 miles, 30-in., contracted by Anderson Brothers Corp., Houston; work starts in July; field office, Elton, La.; spreadman, Arnold Smith.

Texas Unit I.—Gathering laterals to begin in May; El Campo, Tex., area, 58 miles 4 to 14-in., contracted to T. & R. Construction Co., Houston. Wharton, Tex., area, 98 miles, 6 to 14-in., contracted to Altgelt Construction Co.

Texas Unit II.—Work to start in May; Sinton, Tex., area, 38 miles, 4 to 8-in., contracted to Shanks & Eustace, Inc., Alice, Tex.; Dix, Tex., area, 61 miles 6 to 10-in., contracted to Victoria Oil Field Maintenance Co., Victoria, Tex.

Schedule 7—86 miles of 30-in., Georgia, South Carolina, being started by Williams Brothers Corp. Spread under T. E. Davis; field office, Elberton, Ga.

Schedule 8—102 miles of 30-in., and Schedule 9, 100 miles 30-in., in South Carolina and southern Virginia, contracted to R. H. Fulton & Co.; operations under way in northern South Carolina; A. A. Corrigan, supt.; Clark Williams, general supt.

Schedule 10—86 miles of 30-in., and Schedule 11, 110 miles 30-in., contacted to Smith Contracting Corp.; work under way, R. M. Jones spreadman; field office, Altavista, Va.; to go east to meet spread to be put in field later under C. C. Craig; offices,

(Continued on page 122)

NO REPLACEMENT PROBLEM HERE...

with TRANSITE PIPE on the job in this Salt Water Disposal Line

HERE IS ANOTHER Transite* salt water disposal line that will soon be saving money. Frequent pipe replacements will be eliminated because Transite Pipe, made of asbestos and cement combined by a special process, fights corrosion two ways. It resists the corrosive action of salt water on the *inside*... corrosive soil on the *outside*.

You get other advantages, too, with Transite Pipe. Light in weight, it is easy to handle. Most sizes can be unloaded and lowered into the trench without the use of mechanical handling equipment. And Transite's factory-made Simplex Couplings speed assembly ... provide *tight* yet *flexible* joints that permit laying the pipe around curves without special fittings.

*Reg. U. S. Pat. Off.

For further details, address Johns-Manville, Box 290, New York 16, N. Y.

JM

Johns-Manville TRANSITE PRESSURE PIPE

XUM

The Globe "2-Cutter" is made in all popular sizes for geophysical service and in standard sizes up to 26" for regular drilling.

First for Digging Straighter Hole

From the day the Globe "2-Cutter" was first introduced to the oil well drilling industry, it has turned in outstanding records for fast, straight digging! As a result of continuous engineering and development work, it now is available in a wide variety of tooth designs which offer greater drilling efficiency in every type formation from soft, sticky shale to medium hard shale ...there's a Globe "2-Cutter" exactly suited to your well conditions.

For complete information on all Globe "2-Cutter" Rock Bits see your nearest branch office or sales representative.

GLOBE
patented
2-CUTTER
ROCK BIT

Globe

Main Office and Plant: Los Nietos, California • Branches in Ventura, Bakersfield and Santa Maria, California
Export Representative: ROLAND E. SMITH, 617 South Olive Street, Los Angeles, California

Distributed By: HAKE TOOL COMPANY, Houston, Texas and New Iberia, Louisiana • GLOBE OIL TOOLS (CANADA) COMPANY, Calgary, Alberta, Canada • MANUFACTURERS WAREHOUSE COMPANY, Oklahoma City, Oklahoma • DONHAM TOOL COMPANY, Odessa and Snyder, Texas • W. S. SEASE, Dallas, Texas

Among the Drilling Contractors

Number of Active Rigs Equals 1949 High Mark

The number of rotary rigs operating in the United States and western Canada during the week ended June 19 (latest report) climbed to a new high level for this year and equalled the greatest number reported running at any time during 1949. The number, 2,284 rigs, was an incerase of 25 over that of the preceding week. It has been increasing steadily each week since early in May and is now 173 greater than what it was at the start of the present upward trend in drilling activity, and 213 more than the total reported operating at the same time a year ago. The number of rigs running in the United States alone also continued to increase but still lacks 3 of equalling 1949's peak for this region. Operating rigs by areas follow:

ROTARY RIGS IN OPERATION*
(United States and Western Canada)

Area—	Week ended 6-19-50	Change week ended 6-12-50	Change week ended 6-20-49
Gulf Coast	499	+17	— 57
W. Tex.-N. M.	742	—17	+223
Ark.-N. La.-E. Tex.	149	+ 1	— 22
Oklahoma	297	+15	+ 67
Kansas	139	+ 6	+ 39
Illinois-Eastern	140	—10	+ 13
Rocky Mountains	101	+10	— 6
Pacific Coast	132	— 4	— 57
Total U. S.	2,199	+18	+200
Western Canada	85	+ 7	+ 13
Total	2,284	+25	+213

*Courtesy Hughes Tool Co. Trends in drilling activity for the United States and the Gulf Coast and Arkansas-North Louisiana-East Texas areas are shown by graphs on pages 132 and 133.

California Firm Gets 10-Well Peru Contract

Dunlap & Graham, Inc., Long Beach, Calif., has been awarded contract for drilling 10 wells in the Zorritos field of Peru, South America, by Empresa Petrolea Fiscal. Shallow production is now obtained at Zorritos but the contractor will explore zones as deep as 7,500 ft. D. H. Graham, president of the contracting firm, recently returned from Peru, where Fred N. Nelson, drilling foreman, will be transferred to represent Dunlap & Graham.

Nicklos Drilling Co., Houston, is building derrick to drill Continental Oil Co. 1 Noah P. Harrington et al 12,500-ft. test in the Abbeville field, 67-12s-3e, Vermilion Parish, Louisiana.

Kemp Drilling Co., Shreveport, is rigging up to drill a wildcat for its own account in the SE SE 28-4n-3e, Rapides Parish, Louisiana, in an attempt to extend production in the Big Island field in a northwesterly direction. Kemp will attempt to get production from the Wilcox sand series.

Decem Drilling Co., Oklahoma City, is drilling for Arthur B. Ramsey at 1 Martin, a 5,000-ft. wildcat test in the Northwest Camp pool area, Carter County, Oklahoma. Location is in 1-2s-4w.

Bodard Drilling Co., Shawnee, Okla., has a rig running for An-Son Petroleum Co. in the development of

Walter E. Beaird (left), coowner of the Carco Drilling Co., and members of one of the company's drilling crews on a well the company drilled for Coats and associates at a wildcat location north of Hawkins field, Wood County, East Texas. Crew members, left to right from Beaird, are: W. J. Dillard, J. T. Coville, C. L. Hendricks (driller), and E. L. Coleman.

USE 'BESTOLIFE IT'S BETTER

'BESTOLIFE—the Lead Seal Joint Compound used successfully in the Drilling and Refining Industries for years—is immediately available through more than 100 distributors in the U.S.A.

Your nearest supply house field store probably has 'BESTOLIFE in stock for immediate delivery. Use 'BESTOLIFE—It's BETTER!

PLACE EXPORT ORDERS WITH YOUR SUPPLY HOUSE

I. H. GRANCELL
1601 EAST NADEAU STREET
LOS ANGELES 1, CALIFORNIA

Simplex-Jenny
PULLING VALVE SEAT

PULL FASTER and EASIER

Simplex Center-Hole Jennies use hydraulic power for quicker pulling of valve seats, gears, wheels—scores of other oil field jobs. Operate in any position; light weight, quickly set up. 6 models: 30 to 100 ton Capacities.

Simplex LEVER · SCREW · HYDRAULIC Jacks

Send for Bulletin: Oil 49

TEMPLETON, KENLY & COMPANY
1034 South Central Avenue, Chicago 44, Illinois

the new Hunton lime production in the west portion of the St. Louis district, Pottawatomie County, Oklahoma. Latest test is 1 Hines.

Johnson & Flesher Drilling Co., Oklahoma City, got the contracts for drilling two more locations for Ray P. Diehl in the Northwest Tryon pool, northern Lincoln County, Oklahoma. New locations are 2 Lee, NE NE NW 10-16n-3e, and 1 Dodson, SE SW SE 3-16n-3e.

Wolfe Drilling Co., Tulsa, contractor on R. S. Shade's recently completed oil discovery well in 15-22n-5e, 3½ miles northeast of Pawnee, Pawnee County, Oklahoma, is starting a second well for the same operator in that area. The confirmation well is 1 Porter, an east offset to the discovery producer, 1 Colclazier. Production of the discovery well is from the Misener and Wilcox sands at a total depth of 3,544 ft.

Mora Drilling Co., Tulsa, has the contract for a wildcat test which A. A. Bailey is starting in the Rosenwald area, northwestern Okfuskee County, Oklahoma. The new test, 1 Replogle, in 10-3n-8n, is 2 miles northwest of production.

Trigg Drilling Co., Oklahoma City, drilling for Herman Brown in the development of the new Southwest Clothier pool, Cleveland County, Oklahoma, has contracted for two additional tests. They are 1 Peachee, SE SE SE 30-10n-2w, and 2 Miller, NW NE NW 32-10n-2w. Two wells have been completed so far.

Reserve Drilling Co., Great Bend, Kans., is the contractor on Nadel & Gussman's latest well to be started in the Palco pool area, Rooks County, Kansas. The test is 1 Christine, NE NE SE 29-9-20.

R. J. Wixson Drilling Co., El Dorado, Kans., is drilling for J. P. Habiger at a wildcat location southeast of Newton, eastern Harvey County, Kansas. The test, 1 Simpson, is in the SW SW SW 34-23-2e.

Brown Drilling Co., Long Beach, has a rig running in the Rio Vista area, Sacramento County, California, where it is drilling a wildcat location at 1 Silva, 29-4n-4e, for Brazos Oil & Gas Co.

Rocky Mountain Drilling Co., Los Angeles, has the contract for a well to be drilled for Jergins Oil Co. in the Puente area, Los Angeles County, California. Location is at 1 Handorf, 1-2s-11w.

Barnes Drilling Co., Bakersfield, Calif., is drilling Leroy C. Gould's latest test in the Comanche Point area, Kern County, California. The well is 36-1 Tejon, a semiwildcat.

Gene Reid Drilling, Inc., Bakersfield, Calif., has a rig running for North American Oil Consolidated Co. Ct. at 1-11 U.S.L., a wildcat test in 11-19s-10e, Lewis Creek area, San Benito County, California.

O'Rourke-Baker Drilling Co., Tulsa, is starting a 6,000-ft. wildcat test in Grant County, Oklahoma, for Thomas G. Wylie. The test is 1 Young and is located in 18-27n-5w, 3 miles west of Medford.

Southeastern Drilling Co., Jackson, Miss., is starting a 7,500-ft. wildcat test for its own account in 5-8n-5w, about 7 miles east of Waynesboro, Wayne County, eastern Mississippi.

Standco
NO-SMOKE

STANDCO BRAKE LINING

Is the driller's best friend because it makes the easiest brake known and "feeds off evenly while drilling." It never scores brake rims. See pages 3608-3613, Composite Catalog.

Standco Brake Lining Co.
HOUSTON

M-SCOPE PIPE FINDER

MODEL AB
ONE MAN OPERATION
METAL CABINETS
HEAVY DUTY PERFORMANCE
ONLY
$149.50

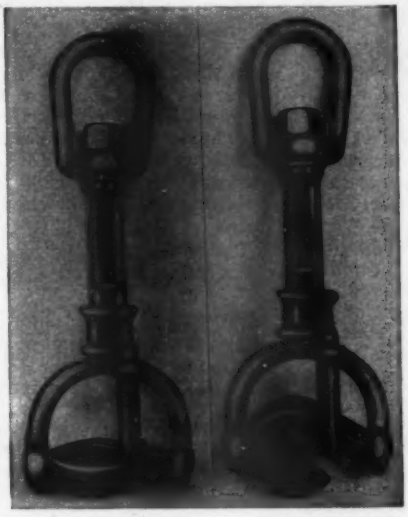
FISHER RESEARCH LAB., Inc.
PALO ALTO CALIF.

OIL DERRICK TIE HOLDER
THE NEWEST FAD IN SMART JEWELRY
Designed for the Man Who Has Everything

Plain 14 K Solid Gold as shown in cut.....$35.00
Same as above with 4 Sparkling Diamonds set in run-a-round....$75.00
Plain 10% Irid Platinum as shown in cut...$70.00
Same as above with 4 Sparkling Diamonds set in run-a-round...$110.00
Plus 20% Excise Tax
Sent by Registered Air Mail upon receipt of check, money order, or COD if you prefer.
Absolutely Guaranteed. Your Money Refunded by Return Mail If Not Entirely Satisfied.

E. W. VICK & SONS
Manufacturers of Exclusive Jewelry
205 E. BROADWAY, LONG BEACH, CALIF.
Further Detailed Information Upon Request

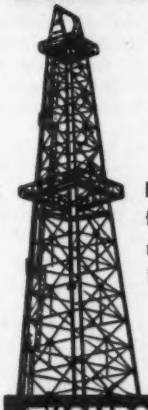
NORRIS BROTHERS IMPROVED SAFETY SUCKER ROD ELEVATOR



Handiest and safest elevator on the market. Forged steel body and high carbon alloy steel forged jaw. Buy from your supply dealer.

NORRIS BROTHERS, INC.
ROBINSON, ILL.

THOMPSON-HAYWARD FORMALDEHYDE *Reduces* CORROSION



- Save on Pulling Costs
- Save on New Steel
- Save on Shutdown Time
- Low Cost
- Dependable
- Field Tested

Protect expensive and hard-to-get steel parts from hydrogen sulphide corrosion and corrosive mine and well waters, with Thompson-Hayward Formaldehyde.

Warehouse Stocks Available For Prompt Shipment

THOMPSON-HAYWARD CHEMICAL CO.
DALLAS, WICHITA, HOUSTON, TULSA, NEW ORLEANS, DENVER, SAN ANTONIO

NEW QUIJADA
SAY "KEE-HAM-DAH"

"CHIEF" PORTABLE PIPE THREADER

Self-lubricating. Fully portable. Clean work area. Full chip pan. Push-pull switch. Audible Thread-length gauge. Automatic chucking and new speed handles—among the features carried by the new *Chief*. It will pay you to get all details today.

The patented automatic chucking feature of the *Chief* places it in a class by itself. Because of this, the *Chief* is a *must* in today's competitive market.

The sensational successor to the famous Quijada Model 3-A. Specific design improvements from stem to stern carry the new *Chief* many strides forward in doing better, faster, cleaner pipe threading work. Range from ½" to 2". Optional ½" and ⅜" pipe—⅜" and 1¼" bolt. Low price.

QUIJADA TOOL COMPANY, INC.
5472 Alhambra Avenue
Los Angeles 32, CALIFORNIA

ASK YOUR JOBBER OR WRITE FOR CATALOG

CANNON PLUGS

TYPE "W"

WATERTIGHT & WATERPROOF ELECTRIC CONNECTORS

FOR applications in extremely damp conditions, marine and underwater to approximately 550 ft. or 250 lb. pressure, Type "W" Connectors are used in geophysical exploration, with pumping equipment and in general industrial uses. Made in three sizes conforming to A-N inserts Nos. 16, 22, 36 with a wide variety of contact arrangements available.

Write for new Bulletin W3, Cannon Electric Development Co., Div. Cannon Mfg. Corporation, Los Angeles 31, California.

SINCE 1915
CANNON ELECTRIC

XUM

AMMONIA
(REFRIGERATION GRADE)

DIRECT SERVICE
FROM
PRODUCING POINT
TO USER IN

TANK CARS
and
CYLINDERS

Discuss contract
shipments or
spot orders with

SPENCER
SPENCER CHEMICAL COMPANY
Executive & Sales Offices: Dwight Bldg., Kansas City 6, Mo.

REFINING

Fuel Contracts

Navy buys $81,000,000 worth of gasoline

WASHINGTON. — Award of contracts for more than 14,000,000 bbl. of gasoline, to cost in excess of $81,000,000, was announced last week by the Navy Department.

The latest contracts awarded by the Armed Services Petroleum Purchasing Agency included 470,000 bbl. of 72-octane motor fuel at a cost of $1,922,000; 807,000 bbl. of automotive gasoline at $3,900,000, and approximately 12,900,000 bbl. of aviation fuel at $75,772,000.

There were two contracts for the 72-octane motor fuel, one to Sinclair Refining Co., New York, for 80,000 bbl. at $433,440 and the other to Phillips Petroleum Co., Bartlesville, Okla., for 390,000 bbl. at $1,488,942.

Contracts for automotive gasoline went to Pontiac Refining Co., Corpus Christi, Tex., for 322,000 bbl. at $1,451,736; Aetna Oil Co., Louisville, 65,000 bbl. at $348,075, and Richfield Oil Corp., Los Angeles, 420,000 bbl. at $2,010,960.

Aviation-fuel contracts went to Sinclair Refining Co., New York, 32,007,000 gal. at $5,666,679; Tulsa Municipal Airport, Tulsa, 805,000 gal. at $98,304; Shell Oil Co., New York, 312,000 gal. at $62,206; Standard Oil Co. (Ohio), Cleveland, 274,000 gal. at $55,567; Esso Standard Oil Co., New York, 78,455,000 gal. at $11,480,843; Bell Oil & Gas Co., Tulsa, 3,508,500 gal. at $299,957; Ashland Oil & Refining Co., Ashland, Ky., 3,508,000 gal. at $367,527; Tide Water Associated Oil Co., San Francisco, 56,362,000 gal. at $5,852,672.

Also Atlantic Refining Co., Philadelphia, 900,000 gal. at $84,600; Roosevelt Oil & Refining Co., Mount Pleasant, Mich., 801,500 gal. at $88,165; Wilshire Oil Co., Norwalk, Calif., 3,360,000 gal. at $277,470; Douglas Oil Co. of California, Paramount, Calif., 2,143,500 gal. at $176,839; Utah Oil Co., Salt Lake City, 2,182,000 gal. at $392,455; Socony-Vacuum Oil Co., New York, 8,091,500 gal. at $862,402; Standard Oil Co. (Ky.), Louisville, 15,367,000 gal. at $2,523,223.

Contracts also went to Phillips Petroleum Co., Bartlesville, 75,290,000 gal. at $10,784,828; Magnolia Petroleum Co., Dallas, 10,989,968 gal. at $1,020,051; Pontiac Refining Corp., Corpus Christi, 15,430,000 gal. at $2.052,190; Standard Oil Co. (Ind.), Chicago, 13,220,000 gal. at $2.069.350; Shell Oil Co., New York, 13.955,000 gal. at $2,211,124; Standard Oil Co. of California, San Francisco, 13.964.266 gal. at $2,041,759; Standard Oil Co. (Ohio), Cleveland, 9,107,000 gal. at $1,440,206; Tide Water Associated Oil Co., New York, 2,258,000 gal. at $276,379; Richfield Oil Corp., Los Angeles, 98,648,506 gal. at $12,430,514; Humble Oil & Refining Co., Houston, 17,777,134 gal. at $3,069,997; Cities Service Oil Co., New York, 50,400,000 gal. at $8,098,630, and Gulf Oil Corp., Pittsburgh, 12,756,092 gal. at $1,988,753.

Derby Planning Expansion

WICHITA.—Derby Oil Co. is planning a $2,000,000 improvement and enlargement program at its refinery here, H. E. Zoller, president, revealed last week.

A catalytic cracking plant will be built which will step up output of the refinery 50 per cent, replacing thermal-cracking facilities.

New Synthetic Rubber

BARTLESVILLE, Okla. — Phillips Petroleum Co., in cooperation with the Office of Rubber Reserve, has developed a new synthetic rubber, made without styrene.

K. S. Adams, president of Phillips, said that limited road tests indicate the rubber, called polybutadiene or "PB" rubber, is superior to GR-S synthetic rubber and perhaps to natural rubber for tire treads, and it may even be equal to "cold rubber" in quality.

"Skyrocketing prices of natural rubber have rapidly increased demand for GR-S synthetic rubber," Adams said, "which is made from a mixture of butadiene and styrene. However, there is a critical shortage of benzene from which styrene is made. Consequently, the Government has not been able to supply the demand for GR-S synthetic rubber."

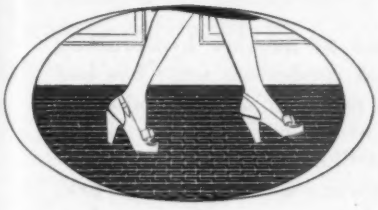
Polybutadiene rubber of a quality suitable for use in tires was finally obtained in Phillips' laboratories by making it much softer than usual with a modified recipe and at moderately low temperatures. In the new process, high abrasion furnace carbon black is mixed with the polybutadiene latex before conversion to solid rubber.

Aldrin, Dieldrin Production

HOUSTON.—Two insecticidal chemicals, Aldrin and Dieldrin (originally designated compound 118 and 498) are now in commercial production by Julius Hyman & Co., Denver, and exclusive distribution will be handled by Shell Chemical Corp.

Both compounds are now availa-

THE **SAFE**
OPEN STEEL FLOORING
IS **TRI-LOK**



No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Efficient distribution of concentrated loads . . . maximum free opening for light and air. Write for Bulletin ML1140.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities

DRAVO

INDUSTRIAL
OIL AND GAS BURNING EQUIPMENT
NATIONAL **AIROIL** BURNER CO., INC.

1236 E. Sedgley Ave., Philadelphia 34, Pa.
Southwestern Division, 2512 So. Blvd., Houston 6, Tex.

"GUNITE" CONCRETE
LININGS FOR
(SINCE 1915)
BUBBLE TOWERS • SETTLERS • STILLS • SEPARATORS • TANKS • AND VESSELS OF ALL TYPES • ENCASING AND FIREPROOFING STRUCTURAL STEEL AND PIPE • LINING WATER RESERVOIRS, DITCHES, DRAINS, AND CANALS • REPAIRING DISINTEGRATED CONCRETE AND OTHER MASONRY.
See our catalog in Sweet's

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.
District Branch Offices
R. N. Turner, Dist. Mgr., 228 No. La Salle St., Chicago 1, Ill. B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City (St. Louis), Mo. Philip D. Barnard, Dist. Mgr., 2036 Addison, Houston 5, Tex.
Branch Offices: Denver, Dallas, New Orleans

ble for large-scale use under experimental labels. The compounds are termed two of the most powerful insecticidal chemicals yet discovered.

Deep Rock Changes Billing

CHICAGO.—B. L. Majewski, vice president in charge of marketing, Deep Rock Oil Corp., announced that effective September 1, the company would discontinue billing regular and premium gasolines, range oil, and No. 2 heating oil on a temperature-correction basis, and will thereafter bill its customers on a volumetric or so-called "shell capacity" basis, throughout its economic marketing territory.

Dow Lets Contracts

HOUSTON.—Construction contracts have been awarded by Dow Chemical Co. pursuant to the company's recent announcement of a $30,000,000 expansion program of its Freeport and Velasco plants, it has been announced by Dr. A. P. Beutel, vice president of the company and general manager of the Texas division.

Contracts awarded are: Genera plant-site development and the construction of ethylene glycol Unit 3 Austin Co.; construction of light hydrocarbon Unit 4, J. F. Pritchard & Co.; construction of chlorine Unit 4 Tellepsen Construction Co.

"The plant-site development work has already begun and the other projects will come in due course," Dr Beutel said.

Fire-Equipment Handbook

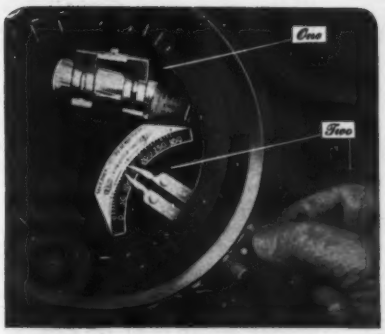
NEW YORK.—A new handbook covering the inspection of fire-protection equipment in oil refineries has been published by the American Petroleum Institute. Designed as a help for the petroleum industry, the manual is part of a continuing project initiated in 1938 by the A.P.I. Division of Refining in the interests of public safety.

The manual is entitled "Part III of the Recommended Practices for Refinery Inspections."

Part I covering the inspection of process equipment was issued in 1948, and Part II covering the inspection of pressure relieving devices was published in 1949.

Three additional parts are in the process of composition, and will be published at later dates. They will cover the inspection of tanks and spheroids, instruments, and electrical equipment.

The fire-protection equipment manual is priced at $1.00, and may be obtained through J. A. McNally at the American Petroleum Institute, 50 West 50th Street, New York 20, N. Y. Copies of Part I and Part II are still available also. Part I may be obtained for $3.00 per copy, and Part II for 75 cents.



There are two things to bear in mind about

Mercoid Controls

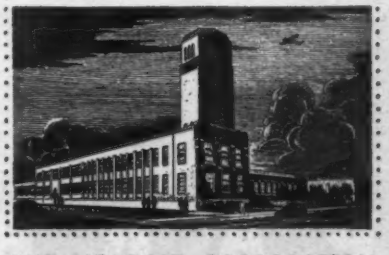
One *The exclusive use of non-corrosive mercury switches. They have proven time and again that no other type of contact compares so favorably from the standpoint of trouble-free service or long years of continuous operation — without showing evidences of a breakdown.*

Two *The simple, accurate and positive means of making necessary operating adjustments. No loss of time or annoying guesswork.*

Engineers readily concede the value of these qualifications, due to the relative functional responsibilities involved in automatic controls.

Complete catalog sent upon request

For Heating, Air Conditioning, Refrigeration and Various Industrial Applications



THE MERCOID CORPORATION

TESTED?

YES! . . . for 3 years!

PROVED?

YES! 26.4% more hydrocarbon recovered per cubic foot of gas flowed from South Texas well.

PROFITABLE?

CERTAINLY! Condensate sales increase net earnings as much as $900 per month.

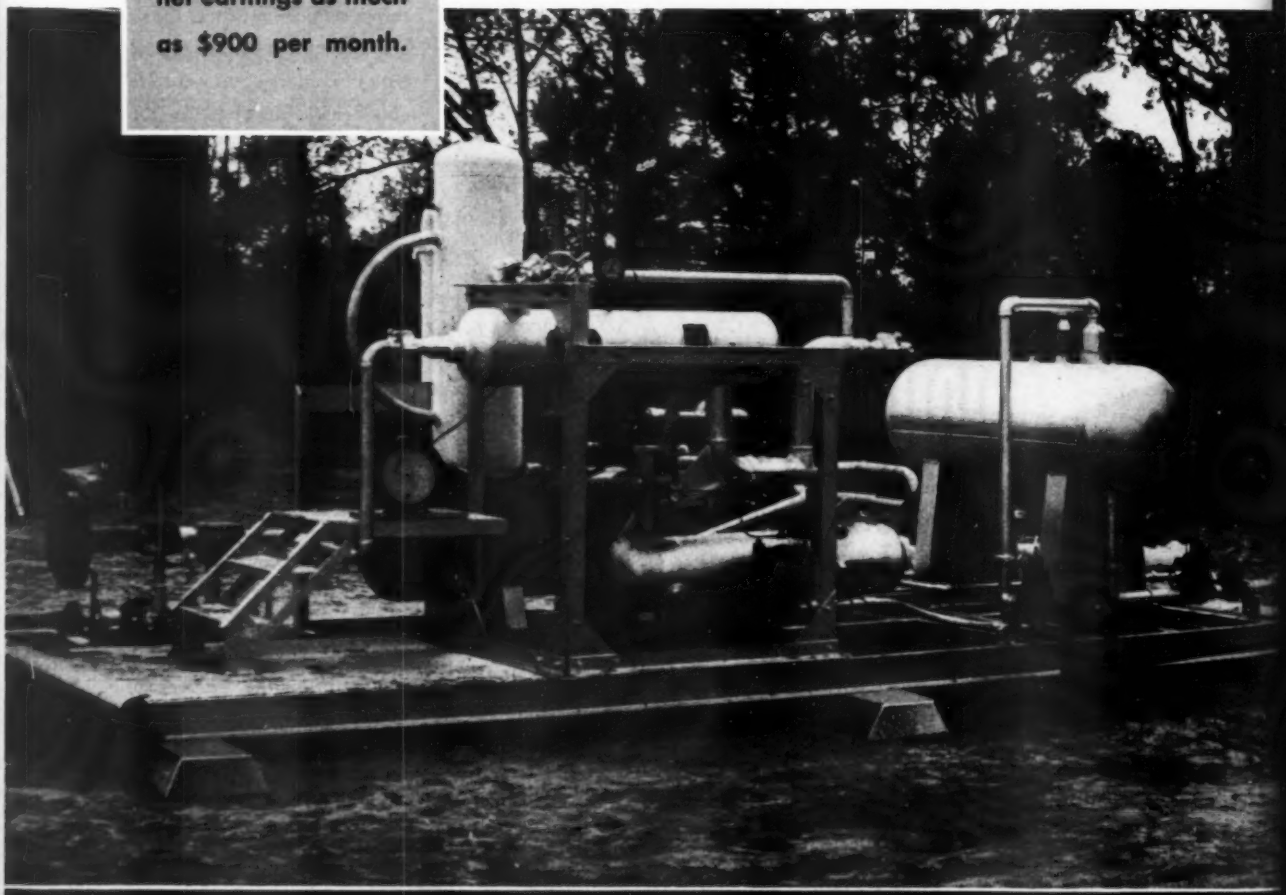
5010

ONLY PARKERSBURG HYRECO PROCESSING UNIT meets these SPECIFICATIONS...

No other equipment designed to increase hydrocarbon recovery from high-pressure gas condensate wells has had the prolonged field testing . . . can offer actual production records to prove the success of its performance, as the PARKERSBURG HYRECO PROCESSING UNIT.

On well after well, most of them especially difficult production problems, the Hyreco Unit increased hydrocarbon recovery . . . increased net earnings from condensate sales . . . proved it can pay out in a few months, pay extra dividends thereafter . . . can operate at temperatures near zero without freezing and plugging the flow system.

Get the facts! Ask your Parkersburg Representative for performance records of the Hyreco Processing Unit. Write for bulletins HR-550 and HR-650.



PARKERSBURG

RIG & REEL COMPANY • Parkersburg, West Virginia

XUM

NATURAL GAS

Gas Revenues

Operating revenues and income gain in April

WASHINGTON. — Operating revenues of natural-gas companies reporting to Federal Power Commission increased 26.4 per cent in April over that month last year, FPC reported recently. Total revenues were $108,568,047, compared with $85,918,811 in April 1949.

Gas-utility operating income for April amounted to $22,787,363, up 37.8 per cent from the $16,532,024 reported for April 1949. Net income for the month was $19,386,115, compared to $13,238,640 reported in April 1949.

Gas operating revenue deductions amounted to $85,861,142, an increase of 23.7 per cent. Of this total, operating expenses accounted for $64,565,572, up 24.8 per cent; depreciation for $8,081,216, up 10 per cent; and taxes for $13,214,354, an increase of 27.9 per cent.

Gas sales to ultimate consumers in April 1950, were 161,748,000,000 cu. ft., an increase of 19.7 per cent over April 1949. Sales to residential consumers increased 28.7 per cent and to commercial and industrial consumers 23.1 per cent and 17 per cent respectively. Revenues from sales to ultimate consumers increased 23.8 per cent and amounted to $54,408,683. Revenues from the three classes of service, residential, commercial, and industrial, increased 29.5 per cent, 24.6 per cent, and 15.7 per cent, respectively.

For the 12 months ended April 30, gas operating revenues aggregated $1,052,529,095, an increase of 14.4 per cent over the total of $919,988,184 reported for the 12 months ended April 30, 1949. Net income for the period amounted to $146,328,481, compared to $132,448,294, for the previous 12 months, or an increase of 10.5 per cent.

Net gas-utility plants of the reporting companies aggregated $2,594,125,011 on April 30, 1950, compared to the $2,201,559,258 reported a year earlier.

These data are based on monthly reports filed with FPC by 79 natural-gas companies which individually derive 50 per cent or more of their operating income from natural-gas operations.

Acetylene Made From Gas

AUSTIN.—The University of Texas announced last week that a method of making acetylene from natural gas and liquid hydrocarbons is ready for commercial use. The method was developed by Dr. E. P. Schoch, director of the university's Bureau of Industrial Chemistry.

Dr. Schoch has worked on the process since 1929. It should permit cheaper manufacture of acetylene for acetic acid, plastics, and other chemicals, its developer believes.

Phillips Hearing Postponed

WASHINGTON.—The Federal Power Commission has postponed until September 11 a hearing previously scheduled to begin June 26 in Bartlesville, Okla., in the proceeding involving FPC's investigation of natural-gas operations of Phillips Petroleum Co.

Postponement was requested by Public Service Commission of Wisconsin and by Phillips.

Jersey Central O.K. Amended

WASHINGTON.—The Federal Power Commission has amended an earlier order to permit Jersey Central Power & Light Co., Asbury Park, N. J., to transport additional volumes of natural gas through its pipe-line facilities, for delivery to its electric generating station at Sayreville, N. J.

Jersey Central on February 10 applied to FPC for authority to build a 7-mile pipe line from its existing system to the electric power plant, but the commission dismissed that application for lack of jurisdiction and found that the company's natural-gas facilities could be used only for the purpose authorized in an FPC order of September 27, 1949. This order authorized Jersey Central to construct natural-gas transmission facilities extending from a connection with Texas Eastern Transmission Corp.'s line to Jersey Central's gas-manufacturing plant at Long Branch, N. J., where the natural gas was to be transformed or mixed with manufactured gas for subsequent local distribution.

Tariff Becomes Effective

WASHINGTON.—A gas tariff filed by Alabama-Tennessee Natural Gas Co. has been permitted to take effect on an interim basis for a 14-month period by the Federal Power Commission.

The tariff will become effective on the first calendar day of the month in which natural gas service is first rendered through Alabama-Tennessee's pipe-line facilities authorized by FPC in 1948 and now under construction. The pipe-line project will serve markets in Alabama and Mississippi.

The interim tariff provides for a monthly rate of $3 per thousand cubic feet per month of billing demand and 16.5 cents per thousand cubic feet commodity charge for sales for resale in interstate commerce.

Alabama-Tennessee originally submitted the tariff on December 16, 1949, to satisfy a condition in the commission's 1948 authorization of the pipe-line facilities which required that the tariff be satisfactory to FPC. The commission subsequently rejected the tariff and public hearings in the matter were held in March and April.

Seeks Horsepower Increase

WASHINGTON.—Texas Gas Transmission Corp., Owensboro, Ky., has asked the Federal Power Commission to authorize installation and operation of 9,960 hp. in compressor capacity at existing and new stations on its system, in order to transport additional quantities of gas for Texas Eastern Transmission Corp., Shreveport.

The proposed construction program includes the installation of 5,460 hp. additional at four existing stations in Tennessee and Kentucky, and construction of a new 4,500-hp. station in Kentucky. Estimated cost of the project is $2,108,887.

The application says that the additional capacity would enable Texas Gas to transport for Texas Eastern up to 60 million cubic feet of natural gas per day between November 1, 1950, and November 1, 1951; and up to 34 million cubic feet per day from November 1, 1951, to November 1, 1952, or until Texas Eastern completes new facilities proposed in an application now pending before FPC.

Texas Gas would transport the gas for Texas Eastern from an existing connection between facilities of the two companies near Lisbon, La., to another connection near Lebanon, Ohio.

Texas Eastern's pending application seeks FPC authorization for the expansion of the daily sales capacity of its system to furnish additional natural gas to its present customers and to supply Algonquin Gas Transmission Co. with gas for resale in New England.

T.G.T. Using Films

HOUSTON.—Tennessee Gas Transmission Co. is now using motion pictures to keep management and directors informed on construction progress of its $100,000,000 enlargement program.

The company's first film has just been completed, and is entitled "T.G.T. Progress Report—Issue No. 1." It shows construction-activity scenes along the company's pipe-line system, which is running from Texas to Buffalo, N. Y.

XUM

LEADING THE FIELD OF SEISMIC EXPLORATION

National's NEW

isochron METHOD

SLASHES SEISMOGRAPH COSTS

• National announces the development of the ISOCHRON Method, a new seismic technique. Where it can be applied, the costs of a seismic reconnaissance survey can often be cut as much as ONE-HALF. Let us give you complete details and costs in a personal interview.

National
GEOPHYSICAL
COMPANY, INC.
DALLAS
CALGARY, ALBERTA, CANADA

LEADING THE FIELD OF SEISMIC EXPLORATION

XUM

South-Central Nebraska Gets Oil

ALPINE OIL & ROYALTY CO. and Bennett & Roberts Drilling Co. 1 Fischer, located in SW SW SE 33-1n-18w, Harlan County, Nebraska, just ½ mile north of the Kansas line, which recently found oil in the Lansing-Kansas City and opened an as yet unnamed pool, is the first commercial well in the south-central portion of Nebraska. This well topped the Lansing-Kansas City at 3,228 ft. and was bottomed at 3,450 ft. Pipe was set on the bottom and perforated at 3,402-06 ft. and at 3,366-74 ft. After acidization of each perforated interval with 2,000 gal. of acid, the well bailed 7 bbl. of oil per hour. Final completion results have not been announced but at the last report the well pumped 90 bbl. of oil in 13 hours. The 2 Fischer, one location to the east, is now drilling.

The success of the 1 Fischer has caused a revival of interest in the northern extension of the Central Kansas oil-field trend and speculation as to how far it may continue. About 4 miles north of the 1 Fischer well, the Powell & Peters Drilling Co. 1 Cauk, NW NW NW 17-1n-18w, Harlan County, Nebraska, topped the Lansing-Kansas City at 3,376 ft. A 25-minute drill-stem test from 3,428-37 ft. recovered 2 ft. of oil and 15 ft. of oil-cut mud. Casing was run to total depth, 3,482 ft. From perforations at 3,458-70 ft. the well bailed 3 bbl. water per hour with a very small show of oil after acidization. With a plug set at 3,449 ft., the casing was perforated at 3,432-42 ft. and after acidization the well bailed 1 bbl. of water per hour with a small show of oil for 6 hours. The hole was plugged and abandoned.

The 1 Fischer is just 6 miles north of Huffstutter pool in Phillips County, Kansas. The Huffstutter pool was opened last September by the B & R Drilling Co. 1 Huffstutter in 6-2s-18w. This pool produces from the Lansing-Kansas City from 3,444-80 ft. It now has 16 wells producing a total of 400 bbl. per day.

Prior to the Fischer strike, Huffstutter pool was the northernmost pool on the Central Kansas uplift. The broad band of oil fields cutting northwestward across the central portion of Kansas follows this uplift, which was formerly called the Barton arch.

The Central Kansas uplift, a broad, strongly up-arched pre-Cambrian feature, cuts northwestward across Nebraska, where it is known as the Chadron arch, and joins the Black Hills region. The Mississippian "Chat," the "Hunton," the Viola, Simpson, and Arbuckle, which are productive in Kansas, do not carry over into Nebraska on the arch. However, the Permian and Pennsylvanian continue into Nebraska and there is every reason to believe that oil will be found near the pre-Pennsylvanian unconformity or in traps above this unconformity.

The presence of thick Tertiary sands and gravels at the surface above the Chadron arch which reach thicknesses of over 1,000 ft. halfway into the state of Nebraska, has handicapped exploration in this area. They make surface work impossible, the results of geophysical exploration uncertain, and restrict core-drilling operations to the area where they are thin. Furthermore, there are approximately 1,000 ft. of Cretaceous sediments which do not necessarily reflect the attitude of the Paleozoics.

In other words, to find the oil believed to be present above the Chadron arch is going to take drilling of 3,000 to 4,000-ft. holes without the benefit of very conclusive preliminary data.

Of current interest in this respect is B & R Drilling Co. 1-F Huffstutter, NE NE NE 8-9n-15w, Buffalo County, Nebraska. This well is 70 miles north of Huffstutter pool. At last report it was drilling at 3,160 ft.

This Central Kansas uplift trend play is not to be confused with the play based on Ohio Oil Co.'s 1949 discovery, 11-15n-49w, Cheyenne County, Nebraska, which is in the northeast part of the Julesburg basin, downdip from the axis of the Chadron arch.

Philip C. Ingalls.

HIGHLIGHTS OF WEEK'S DEVELOPMENTS

ROCKY MOUNTAIN AREA.—Pure Oil Co. has stopped drilling at its 1 Unit, deep wildcat in the Badwater area, Natrona County, Wyoming at 15,172 ft., total depth. Seaboard Oil Co. is coring for the Weber at its Massadona, Colorado, wildcat, the 63-12 Government. In northeastern Colorado, British-American Producing Co. and Plains Exploration Co. are making location for their fourth joint wildcat.

TEXAS GULF COAST.—American Republics Corp. 1 O. C. Nelson League, Abstract 40, 8 miles north of Silsbee, Hardin County, has been completed for 50 bbl. of condensate plus 12,000,000 cu. ft. of gas daily on open flow gage. Production is from the Yegua sand at 7,627-32 ft. Two miles southeast of Magnolia, Montgomery County, Superior Oil Co. has dually completed 1 L. N. Kramer et al., discovery. Casing completion was made at 10,900-15 ft., and the well flowed 25 bbl. of 47.8°-gravity oil per day. Through perforations in the tubing at 11,222-11,377 ft., the well flowed 27 bbl. of 46.5°-gravity oil daily.

WEST TEXAS.—Estill Heyser 2 Lohman, 114-G-W&NW, 2-mile south extension to Salt Creek field, Kent County, completed for 480 bbl. of oil a day through ¾-in. choke, based on a 6-hour gage. Production was from perforations at 6,474-6,515 ft., and open hole from 6,516-35 ft. Tide Water 1-E-A Tapp, 2-C38-PSL, confirmation well for Corrigan field of Terry County, completed for 1,566 bbl. of oil a day through ¼-in. choke. Casing perforations were from 11,555-75 ft. It is a northwest offset to the discovery which rated 1,121 bbl. daily from Fusselman at 11,475-11,542 ft.

XUM

Mississippi

Coring Operations Begun In Pickens Field Test

JACKSON.—Carter Oil Co. has commenced coring operations at 1 R. M. Bridgeforth. SW SW 30-12n-3e, in the Pickens field of Yazoo County. Test is a direct west offset to Carter's 1 Wilson, initial Travis Peak producer in Mississippi. Core at 7,520-35 ft. with recovery being 6 in. of sand with no show, 2 in. of shale and 14 ft. of sandstone with no show. An unsuccessful drill-stem test was made at 7,521-35 ft. Coring was then continued to 7,559 ft. with recovery being sand with no shows. An electrical log was then run to 7,676 ft. which showed sand body at 7,515-60 ft. which was very similar to that in the discovery well at 7,510-45 ft. A core was cut at 7,678-99 ft. with recovery being 12 ft. of shale and 9 ft. of sand with no show. Operators are now running a drill-stem test in this section.

The operator's 1 Wilson is productive from a sand body at 7,728-36 ft. in the Travis Peak. It was drilled to a total depth of 12,250 ft. and was tested extensively in Smackover lime before being plugged back and completed in the 7,700-ft. zone. On initial production tests the well flowed 150 bbl. of oil per day, but has declined in the last few months and is now producing approximately 100 bbl. per day.

In Wilkinson County, approximately 5 miles southwest of Possum Corner field, Peterson Drilling Co. will drill a 7,750-ft. Wilcox wildcat in NE 2-3n-3w.

Humble Oil & Refining Co. has abandoned its 1 Mrs. J. M. Stanton, 50-7n-3w, confirmation test to the one-well field, located just south of the city of Natchez, Adams County. Test was abandoned at 7,000 ft.

MISSISSIPPI WILDCAT FAILURES

Adams County: Dorris Ballew, Inc. 1 Natchez Dressed Beef Co., 19-7n-3w, dry, TD 6,505 ft.

Humble Oil & Refining Co. 1 Edna Blewett Parker and others, 53-8n-2w, dry, TD 7,400 ft.

Barnett Serio 1 L. A. Whittington, 21-6n-2w, dry, TD 6,335 ft.

GEORGIA WILDCAT FAILURE

Decatur County: Calvary Development Co. 1 Scott, Land Lot 25, Land Dist. 22, dry, TD 4,195 ft.

South Louisiana

Discovery Confirmed in Old Valentine Field

NEW ORLEANS.—The old Valentine field in Lafourche Parish has confirmation of a new pay discovery at Joe W. Brown 2 South Coast Corp., which showed good gas-distillate and oil in sands between 11,000 and 11,500 ft. The discovery well opened a sand series in zones from 10,850 to 11,300 ft. Operator perforated the confirmatory well at 11,880-84 ft., and one test the well flowed at the rate of 197 bbl. of oil daily through ⅛-in. choke. Tubing pressure was 2,050 psi. Test was drilled to a depth of 12,584 ft.

This oil discovery is located in the northern part of Valentine field. Tte field was discovered in 1936, and discovery was completed in sands around 6,900 ft. Later, another sand was discovered on the west flank around 6,600 ft.

Gas-condensate production in the Turtle Bayou field has been confirmed at 2 Continental Land & Fur Co., 32-17s-14e, Terrebonne Parish. The well flowed 65 bbl. of distillate per day plus 3,408,000 cu. ft. of gas through a 13/64-in. choke. Gravity is 47.4°. Production is through perforations at 11,254-64 ft. The discovery well, which was brought in the latter part of last year, is producing through perforations at 11,980-88 ft. The confirmation test establishes a different pay sand from the discovery.

In St. Landry Parish, Magnolia Petroleum Co. 1 Alice Rozas, deep wildcat, 41-6s-4e, was perforated at 12,585-12,601 ft. and gave gas bubbles for 1 hour. Operators will probably reperforate the well.

Shell Oil Co. has set 5-in. casing in 1 Vivian J. Gianelloni, 47-8s-1e, East Baton Rouge Parish wildcat, and is preparing to test sands which produce in the Sunshine field, approximately 4¼ miles southwest. Casing was landed on bottom at 10,256 ft. Operators are reported to have cored the Sunshine field pay section about 400 ft. high to the Sunshine field, and apparently it is upfaulted from that sector.

The 24 new locations include 2 wildcat starts, 1 each in Jefferson and Rapides parishes. There were two successful wildcats completed, one each in Lafourche and Plaquemines parishes, while one was dry in Beauregard Parish.

SOUTH LOUISIANA SUCCESSFUL WILDCATS

Lafourche Parish: New pay at Lake Raccourci—Humble Oil & Refining Co. 1 Lake Raccourci, State Lease 1451, TD 13,000 ft., top pay 8,970 ft., perf. 8,970-9,010 ft., IP: 53 bbl. condencate per day, ½-in. choke, plus 700,000 cu. ft. of gas, TP 3,200 psi., 60.2° gravity.

Plaquemines Parish: New pay at South Pass Block 24 (offshore)—Shell Oil Co. 2 State Lease 1,008, Township 23s-31e, TD 9,688 ft., perf. 8,054-60 ft., IP: 82 bbl. oil

FOR SALE

INDUSTRIAL PLANT FRONTING MISSISSIPPI RIVER BATON ROUGE, LA.

95 ACRE TRACT SERVED BY TWO RAILROADS

- Best available manufacturing plant in Baton Rouge, industrial capital of the dynamic new South . . .
- Approx. 109,000 Sq. Ft. of space in the sprinklered main building . . . has own water well . . .
- Suitable for any type manufacturing . . . adequate skilled labor available . . . early occupancy . . .

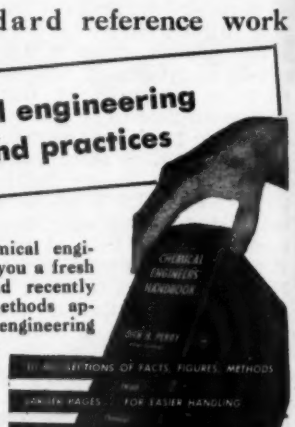
PRICE $290,000.00

LATTER & BLUM, INC.
919 Gravier St.
New Orleans

KNOX & AMISS
205 Florida St.
Baton Rouge

The world's standard reference work *of*

Modern chemical engineering fundamentals and practices


CHEMICAL ENGINEERS' HANDBOOK
SECTIONS OF FACTS, FIGURES, METHODS
FOR EASIER HANDLING
MORE THAN 140 OUTSTANDING CONTRIBUTORS

THE 3rd edition of this chemical engineering reference work gives you a fresh coverage of both standard and recently compiled facts, figures, and methods applicable not only to chemical engineering but to all related fields important to the industry.

New Third Edition

• Perry's •

CHEMICAL ENGINEERS' HANDBOOK

Prepared by a Staff of Specialists

John H. Perry, Editor, Technical Investigator, E. I. de Nemours & Co.

- Completely up-to-date
- Over 2000 illustrations, graphs, and tables
- Thumb-indexed for quick reference
- Bigger illustrations, fully revised
- 1942 pages, $15.00

HERE are the details of developments in every branch of chemical engineering—including those of recent critical years . . . to bring you up-to-date on technical data, new procedures, modern applications, new equipment, etc. Important information—previously restricted to only a "classified" listing—is also included.

THE OIL AND GAS JOURNAL
TULSA 1, OKLAHOMA

per day, ¼-in. choke, TP 2,500 psi., 29.5° gravity.

SOUTH LOUISIANA WILDCAT FAILURE
Beauregard Parish: S. A. Brewster & W. O. Bartle 1 Lutcher Moore Lumber Co., 24-7s-12w, 8 mi. NW of DeQuincy, dry, TD 8,770 ft.

California

Extensions Indicated In Three Fields

LOS ANGELES.—Potential extensions to the Morales sand area of north Cuyama Valley, to the Belgian Anticline field, and at Ventura Avenue were among the top developments in California last week.

Two locations south of the Morales sand discovery well in northwestern Cuyama Valley, Bishop Oil Co. has cemented 7-in. casing and landed 5½-in. liner at 1,830 ft. in its No. 67-10 Chorum. After drilling through the thrust fault at 1,450 ft., hole was carried to total depth of 2,175 ft. and then plugged back to 1,830 ft. At the weekend, Bishop was preparing to complete the stepout, located in Section 10-11n-28w.

Further knowledge of the pool's extent to the southwest will soon be gained as equipment is being moved in for a test in Section 16. Located about 1 mile southeast of current Morales sand activity, the wildcat will be Peak Oil Tool Service, Inc. 81-16 Stone.

Pacific Western Oil Corp. and Tide Water Associated Oil Co. 82A-31 Rankin probably has extended Belgian Anticline production about ½ mile south. On a 20-minute formation test at 5,400-77 ft., the well flowed at the rate of 2,000 bbl. daily, producing 31.7°-gravity crude. At last reports the operator was coring ahead below 5,493 ft.

One mile northeast of Ventura Avenue, Coastal California, and in 19-3n-22w, Lloyd Corp., Ltd. has recemented its 1 Sexton in an effort to shut off water. At total depth of 13,450 ft., the extensioner on production tests earlier flowed at the rate of about 500 bbl. of oil daily with a water cut of some 200 bbl.

The new tests under way on the southeast flank of the old Long Beach field will seek production from the 6,400-ft. sand discovered earlier this month by Jerman & Bartee 1 Webb. The two new tests, Herley-Kelley 1 Mottells, and Jerman & Bartee 1 and J, were staked between the extensioner and outskirt producers of the Long Beach field.

In Section 29 and 30, some 2 miles northeast and in Signal Hill townsite, a dozen rigs are engaged in extending productive limits of the 2,300-2,400-ft. sand opened last month by Jack C. Rogers, 1 Enterprise. By last weekend six new producers had been completed and an equal number of old wells had been plugged back for recompletion in the 2,300-ft. zone. Initial productions of these wells have ranged from light pumpers to flowing wells of around 1,000 bbl. daily.

In the Tejon area of Kern County, a shallow discovery between the Tejon Hills and Tunis Creek fields seems more or less assured. Bottomed at 545 ft., Standard Oil Co. of California 3-66 Tejon Ranch topped the Santa Margarita at 435 ft. and had good sand sections to 510 ft. On a drill-stem test of this interval, some 236 ft. of oil and oil-cut mud was recovered. At last reports 7-in. casing was being set at 435 ft.

At the Tunis Creek area in Section 29-11n-18w, about ½ mile south, discovery of a slightly deeper sand enhanced that pool's possibilities. Last February, D. K. Associates 13-28 Corral found a Miocene sand productive at 1,316-40 ft. and was completed for a 200-bbl. producer, Subsequent development resulted mostly in dry holes, but last week D. K. Associates located an "unnamed" sand at 1,564-1,675 ft. at its 73-

ALTEN
EQUIPMENT

THE WORLD OVER

SURFACE EQUIPMENT PUMPING EQUIPMENT FIELD EQUIPMENT

ASK FOR COMPLETE ALTEN LINE AT YOUR LOCAL SUPPLY STORE

ALTENS FOUNDRY & MACHINE WORKS, INC.
LANCASTER, OHIO, U. S. A.

ALTEN

XUM

29 Corral in Section 29. The discovery has been completed as a 500-bbl. per day producer, flowing 33°-gravity oil.

CALIFORNIA UNSUCCESSFUL WILDCATS

Los Angeles County, Castaic area: Macson Oil Co. 1 Radovich, 26-5n-17w, dry, TD 3,494 ft., elev. 1,334 ft.

Kern County, North Comanche Point area: Chansior-Canfield Midway Oil Co. 2 Tejon, 23-32s-29e, dry, TD 1,282 ft., elev. 780 ft.

San Luis Obispo County, Templeton area: Frontier Petroleum No. 1 Cook, 26-27s-12e, dry, TD 2,505 ft., elev. 1,155 ft.

Tehama County, Corning area: Buttes Oilfields, Inc. 2-A Corning Community, 13-24n-3w, dry, TD 1,950 ft., elev. 280 ft.

Canadian Fields

Three Good Tests Nearing Completion

CALGARY.—Three of four Alberta wells that were either rated as oil discoveries or sizable extensions to already established oil pools are nearing completion and will be placed on production, while the fourth will set casing through the productive zone and drill for lower objectives.

Two wildcats north of Woodbend, in central Alberta, discovered oil in the Lower Cretaceous, while one of those also indicated that it would be oil productive in the D3 zone of Devonian.

North Woodbend 1, in LSD 2, 28-51-26w4, a joint venture of Anglo-Canadian Oil Co., Home Oil Co., the Calgary & Edmonton Corp. and Imperial Oil, Ltd., logged oil in the Lower Cretaceous, was carried down to the Devonian, and topped that zone at an elevation favorable for production. During drill-stem tests in the upper section of D3, 1 North Woodbend showed sizable natural gas flows, with some naphtha content. The well is currently at 5,290 ft., believed just in or near the gas-oil interface. It was scheduled to run a drill-stem test over the week end. That well will likely complete as a Devonian producer, with the Lower Cretaceous being tapped by a later well. It is located about a mile north of previous Devonian oil production.

About 2½ miles northeast of the Anglo-Home-C. & E.-Imperial venture, another Lower Cretaceous oil discovery, Pacific-British 1 Dominion-Woodbend, in LSD 4, 36-51-26w4, is running a production string of casing for completion in that horizon. The well, which assured oil in the Cretaceous, is owned by Pacific Petroleums, New British Dominion Oil Co., Calvan Petroleums, Tower Petroleums, Imperial Oil, Ltd., and a private Calgary group. Another well is being planned by the same group to be drilled as a Devonian test, probably a quarter mile north of the Cretaceous discovery.

Another central Alberta wildcat is being prepared for production. That well, 8-14 Imperial-Superior-Joseph Lake, in LSD 8, 14-50-22w4, rated as a 2-mile southeast extension success to the Viking sand, Joseph Lake oil pool, but failed to find production in the Devonian. It is being plugged back to the Viking for completion from that zone. The Joseph Lake venture is owned by Imperial Oil, Ltd., Superior Oils, General Petroleums, Kroy Oils, and Jupiter Oils.

The joint British American and Shell wildcat at Whitelaw, in far northwest Alberta, will probably have string of casing set over the week end, and will then proceed to lower depths. Whitelaw, located about 35 miles west of Peace River town, in LSD 2, 14-82-2w6, made a discovery of crude oil in the Triassic formation about 2 weeks ago. After the oil sand has been cased off, the hole will drill in search of Devonian oil, present at Imperial's Normandville discovery, about 36 miles to the southeast.

Eighteen wells were completed in Alberta during the past week, boosting total completions to 373 since the beginning of this year. The completion list now stands at: 280 oil wells, 13 gas wells, and 80 failures. This week brought 14 oil producers, 1 gas well, and 3 wildcat failures.

Redwater accounted for 11 of the week's oil wells, 9 of which were drilled by Imperial Oil, Ltd., and 2 by the Dome Exploration-Western Leaseholds group.

At Leduc, the Washing State 'Inland Empire Region' group, Leduc Calmar, P. C. M. Syndicate team placed its southeast Leduc extension oil success on steady production. Imperial Oil completed another field well. The other producer was drilled by Imperial in the Excelsior field.

The lone gasser this week was drilled in the Rolling Hills area of southern Alberta, by Southern Alberta Oil & Gas Co.

WILDCAT FAILURES

1 Imperial-Alpen, in LSD 1, 28-63-20w4, TD 4,151 ft.

1 Stanolind - Grimshaw, in LSD 16, 13-83-24w5, TD 7,117 ft.

1 Redwater Leaseholds - Globe - Masters, in LSD 13, 11-43-16w4, TD 4,136 ft.

Texas Gulf Coast

Gas-Distillate Production Opened in Hardin County

HOUSTON.—Gas-distillate production has been opened in Hardin County at American Republics Corp. 1 fee, O. C. Nelson League, Abstract 40, 8 miles north of Silsbee. The well flowed at the rate of 12,000,000 cu. ft. of gas daily plus 50 bbl. of distillate on open-flow gage. Shutin pressure was recorded at 2,565 psi. Production is through perforations at 7,627-32 ft. in the Yegua sands.

Two miles southeast of Magnolia, Montgomery County, Superior Oil Co. has dually completed 1 L. N. Kramer and others, wildcat, Edward Taylor Survey, Abstract 554. Casing completion was made through perforations at 10,900-15 ft., and through a ¾-in. choke. The well flowed 25 bbl. of 47.8°-gravity oil per day plus 715,000 cu. ft. of gas. Casing pressure was 136 psi. The tubing completion was made from open hole at 11,222-377 ft .and flowed at the rate of 27 bbl. of 46.5°-gravity oil daily plus 295,000 cu. ft. of gas through a ¾-in. choke. Tubing pressure was 115 psi.

Curtis Singleton Drilling Co. has completed the 1 J. C. Robertson for a northeast extension to the new gas field discovery, the 1 McCord, James Stone Survey, Abstract 306, Bee County. The extension is located approximately 1 mile northeast of the discovery. The well was drilled to a depth of 1,976 ft., and through perforations at 1,952-67 ft., it flowed 32,500,000 cu. ft. of gas per day on open-flow gage.

Five miles south of Sandy Point field, Brazoria County, Skelly Oil Co. has completed its 1 E. O. Koutnik for a new gas-condensate discovery. Through perforations at 7,528-28½ ft. (two shots), the well flowed 732,000 cu. ft. of gas per day plus 32 bbl. of condensate. Tubing pressure was 2,050 psi. and estimated gas-condensate ratio 32,000 to 1. It is located in W. D. C. Hall Survey, Abstract 69.

The 53 new locations include 17 wildcat starts, 1 each in Bee, Goliad, Jackson, Live Oak, Victoria, Fayette, Fort Bend, Galveston, Hardin, Jefferson, Liberty, Montgomery, Newton, Orange, and Wharton counties and 2 in Karnes County.

TEXAS GULF COAST (DISTRICTS 2 AND 3) SUCCESSFUL WILDCAT

Matagorda County: New pay at Tidehaven—Hinkle Drilling Co. 1 Mrs. Abel B. Pierce and others, J. Tilley Sur., A-93, TD 8,907 ft., top pay 8,888 ft., perf.

How you can save money on well log copies
YOUR SAVI
Do you want the facts and figures on how much the reproduction of Color Well Logs are now costing you, and how much you can save by using Color Research, Inc. service??? Then write to Color Research, Inc. at 2407 West Indiana, Midland, Texas, and have them send you an interesting, pocket size "Saving's Book", which completely and briefly explains by chart what your costs are when you use hand copying, and how you save when you use Color Research, Inc. for all your Color Well Log Reproductions.
COLOR RESEARCH, INC.
2407 West Indiana, Midland, Texas

8,896-8,903 ft., IP: 193 bbl. oil per day, 11/64-in. choke, TP 900 psi., 39° gravity.

TEXAS GULF COAST (DISTRICTS 2 AND 3) WILDCAT FAILURES

Brazoria County: Brazos Oil & Gas Co. 1 State of Texas Lease 32,570, John McNeel League, 10 mi. N of Jones Creek, dry, TD 11,681 ft.

Fort Bend County: W. Steward Boyle & J. B. Ferguson 1 Taylor, Issac McGary Sur., north of Kendleton Townsite, dry, TD 4,120 ft.

Harris County: W. H. Teel 1 M. M. Feld, H. Sanders Sur., A-753, ½ mi. SW of Aleda, dry, TD 8,058 ft.

Liberty County: Gulf Oil Corp. B-1 Elnett Partlow, Moss Hill area, Samuel Strong Sur., 15 mi. N of Liberty, dry, TD 8,355 ft.

Montgomery County: The Moran Corp. 1-A Hutchings-Sealy National Bank, J. C. Pitts Sur., 5 mi. NE of Conroe, dry, TD 8,478 ft.

Victoria County: R. S. Randerson & Alex W. Head 1 Rydolph-Smolik, A. Perez Sur., A-92, 1½ mi. W of Bloomington field, dry, TD 6,814 ft.

Robert Riesenberg, Tr., 1 Mrs. Annie Kolle, S. Rabia Sur., A-289, 4 mi. N Telferner field, dry, TD 5,418 ft.

Wharton County: R. E. Hibbert 1 Brandes, Thos. Slaughter Sur., A-59, 2 mi. SE of East Bernard, dry, TD 8,517 ft.

Michigan

Significant Oil Show For Mecosta Wildcat

MOUNT PLEASANT.—A Traverse oil show which may prove to be significant was being acidized and tested at Louis Rose 1 Lane, NW NW NW 26-14n-10w, Mecosta Township wildcat, Mecosta County, June 22.

The oil show was logged in the Traverse at 2,855-58 ft. and hole carried 300 ft. of free oil after a 42-hour fillup period. A fair to good gas head was reported to be blowing from the hole. Traverse lime top was checked in at 2,851 ft. Hole is presently bottomed out at 2,860 ft.

First attempts to set a long string of 5-in. casing on bottom with a perforated bottom joint failed and hole had to be reamed and cleaned out. Late Thursday evening it was reported that well was not responding too rapidly to acid.

Original projected depth and objective for this test was approximately 4,000 ft. into the Reed City-Monroe horizon, but if commercial production is established in the Traverse it is expected that well will be completed in this horizon.

Mercer Oil Co., Inc. 1 Schafer, SE SE SW 18-8n-5w, North Plains Township wildcat, Ionia County, was being equipped with pump unit after preliminary tests of a potential Dundee oil pay showed only 8 bbl. of oil and a like amount of water at 2,991 ft., plug-back depth from original total depth of 2,993 ft. Dundee top was 2,970 ft.

In the recently reactivated Gibson Traverse field, Bay County, Ervin Major's 1 Wright, SW SW SW 1-18n-3e, Gibson Township, flowed at the rate of 54 bbl. of oil an hour after acid treatment in the Traverse at 2,034 ft., total depth. Top of objective was logged at 2,015 ft. The 1 Wright is the direct east 10-acre offset to a recently completed 12-bbl. producer in the same horizon. Major acidized with 600 gal. and pinched flow-rate back to 50 bbl. a day after first 2 hours of open flow testing.

MICHIGAN WILDCAT FAILURES

Allegan County, Lee Township: Norman L. Stevens 1 Harris & Taylor, SW SW NW 16-1n-15w, Traverse 1,209 ft., dry, TD 1,231 ft.

Mecosta County, Aetna Township: Taggart Bros. Gas Co. 1 Switzer-Hill, SE 36-13n-10w, Stray 1,139 ft., dry, TD 1,150 ft.

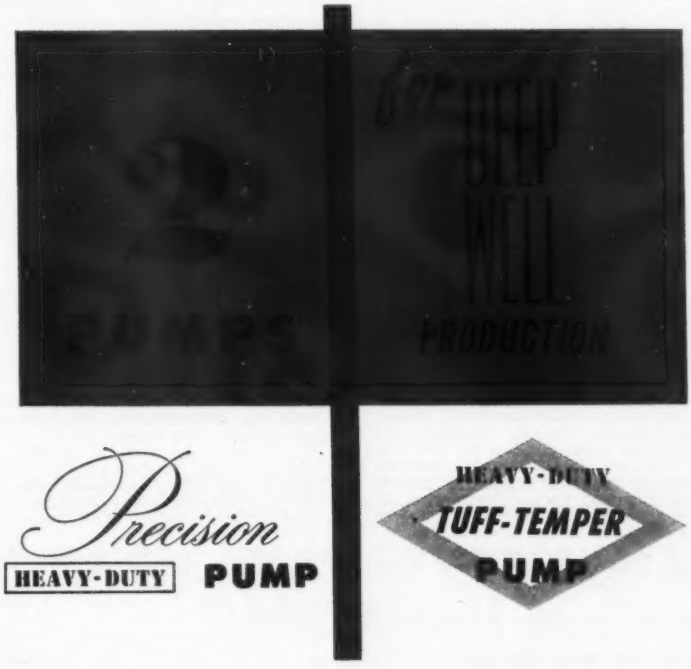
Ottawa County, Olive Township: William C. Vandenberg, Jr. 1 Brouwer, SE NE SE 17-6n-15w, Dundee 1,915 ft., dry, TD 2,593 ft.

Rocky Mountain

Pure Abandons Deep Wildcat in Badwater Area

DENVER.—Pure Oil Co. has abandoned its deep wildcat in the Badwater area, Natrona County, Wyoming, at 15,172 ft., total depth, in the Mesa Verde. The well is 1 Unit, SE NE NW 35-39n-89w, and is the second deepest to be drilled in the Rocky Mountain region. It is located on a large seismic high along the north side of the Wind River Basin, west of a deep failure drilled several years ago in the Lysite area by Sinclair Oil & Gas Co. At around 15,000 ft., Pure logged a show of gas, possibly in Mesa Verde sands, but after coring below that depth found no shows to justify running casing and testing the zone. The zone may correlate with a zone in Mesa Verde found at Pure's West Poison Spider field, 40 miles southeast, where Pure now has one Mesa Verde oil producer. The Badwater well had as original objective the Frontier sands, also productive at West Poison Spider at around 14,000 ft.

In the Massadona area, between the Rangely and Elk Springs fields, Seaboard Oil Co. is now coring for the top of the Weber sand at 63-12-Government, NE SW NE 12-3n-100w, Moffat County, Colorado. The well is now at 3,484 ft., with Seaboard diamond coring for that formation. The well is of importance because of its loca-



Precision
HEAVY-DUTY PUMP

HEAVY-DUTY
TUFF-TEMPER
PUMP

New *Precision* Heavy-Duty Rod Pump has extra-strength construction throughout with a hardened alloyed iron, sectional-type plunger. Breathing and flexing common to most deep-well pumps are eliminated by the double-thick, one-piece working barrel, precision ground to gun barrel accuracy.

New TUFF-TEMPER Heavy-Duty Rod Pump also has a double-thick, one-piece barrel. Bore is hardened by an exclusive H-F process. Plunger has extra-heavy plating of hard chromium, machine-polished for exact fit in barrel.

Order from your supply store, or obtain complete details from

H-F
Harbison-Fischer Mfg. Co.
2501 Virginia St., Ft. Worth, Texas

Rod Pumps ☆ Tubing Pumps ☆ Polished Rods ☆ Polished Rod Stuffing Boxes
Balls-and-Seats ☆ 'Flexite' Plungers ☆ Wire-Line Oil Savers ☆ Hydraulic Tubing Testers

XUM

tion between the two Weber sand fields, and also due to extensive geophysical and core-drill work in the area by Seaboard. Immediately following development of Weber sand production in the Rangely field there was an active exploratory drilling program throughout northwestern Colorado by various operators. However, other than the small Elk Springs field there has been no encouragement on further oil production in the area. Across the state line in Uintah County, Utah, Weber sand oil has been developed at the Ashley Valley field, where there are now 30 wells producing in that formation.

Continuing its exploratory drilling campaign in northeastern Colorado British-American Oil Producing and Plains Exploration Co. are now making location for their fourth joint wildcat. The operators are near completion on 1 Thomas, NE SW SW 13-11n-53w, wildcat in the Winston area, Logan County, with the well drilling below 5,600 ft. Test of all possible producing sands have shown water. The well is approximately 25 ft. lower structurally than their 1 Segelke, N NW NE 26-11n-53w, which recently pumped 81 bbl. of oil daily from a sand in the Cloverly section. These operators have more than 300,000 acres leased throughout northern Logan County, and prior to British-American's joining in the program, and doing seismic work through the area, Plains had drilled four dry holes in the area. This area is immediately south of the Sidney area, Cheyenne County, Nebraska, where the Ohio Oil Co. has established production in three pools.

New locations.—There were 25 new locations with 14 in Wyoming, 5 in Montana, 4 in Colorado, and 2 in Western Nebraska. In Wyoming, General Petroleum Corp. is rigging up rotary for a wildcat at 84-32-Government, SE SE NE 32-47n-92w, in the Slick Creek area, Washakie County. The well will be a test to Phosphoria at around 10,200 ft., and is located on a seismic high south of the Worland field. Peak Drilling Co. of Wichita, Kans., has spudded a wildcat in the East Sussex area, Johnson County, 3 miles east of production in the Sussex field. In Colorado, Aladdin Petroleum Co. of Wichita has made location for its first Rocky Mountain operation in the Amherst area, Phillips County, at 1 State, C NE SW 36-9n-44w. Rico Oil Co. of Los Angeles is spudding 1 Finnerty, C NE NW 23-2s-68w, immediately north of the town of Denver. Thomas W. Boswell of Texas has made location for a 3,000-ft. Devonian test in the Garneil area, Judith Basin County, Montana, at 1 Dolgan, NE NW SE 12-11n-15e.

Completions.—There were 14 completions with 8 in Wyoming, 4 in Montana, and 2 in western Nebraska. The Ohio Oil Co. completed its Sunol area discovery east of Huntsman, Nebraska, with the well pumping 126 bbl. oil daily, and Jack Manning and others completed a Cloverly series failure in the Northeast Gurley area.

MONTANA WILDCAT FAILURE

Black Butte area, Petroleum County: Cherry & Kidd 1 Brasier, SW SW SE 5-17n-23e; 2,050 TD; abd.; first Cat Creek 1,335, Kootenai 1,410, second Cat Creek 1,550, third Cat Creek 1,727, Morrison 1,839, Ellis 2,025.

WESTERN NEBRASKA SUCCESSFUL WILDCAT

Sunol area, Cheyenne County: Ohio Oil Co. 1 McLemon, NE NE NE 9-14n-49w; 5,016 TD; perf. pump 126 bbl. oil per day; 7-in. cas. at 4,959 w/225 sx.; Niobrara 3,699, Ft. Hayes 3,980, Codell 4,076, Greenhorn 4,216, "D" sand 4,491; "G" sand 4,553, "J" sand 4,618, "M" sand 4,826, "O" sand 4,880.

WESTERN NEBRASKA WILDCAT FAILURE

Northeast Curley area, Cheyenne County: Jack Manning and others 1 Davis, NE NE SE 23-16n-49w, 4,710 TD; abd.; Pierre 1,148, Niobrara 3,737, Ft. Hayes 3,990, Codell 4,087, Greenhorn 4,257, "D" sand 4,510, "G" sand 4,563, Skull Creek 4,708.

North Central Texas

First Caddo Production Assured in Baylor County

WICHITA FALLS.—First Caddo oil production in Baylor County has been assured at J. J. Lynn 1 First National Bank of Fort Worth, Block 197, T&NO Survey, 10 miles east of Seymour.

After plug was drilled on casing set at 5,099 ft., total depth, casing was perforated with 6 shots from 5,086-98 ft. At last report the well was not flowing but was making about 8 bbl. of oil an hour on the swab.

The same operator was drilling ahead below 1,290 ft. at 1-B Claude Cowan, Block 206, T&NO Survey, 1 mile south of the Caddo discovery.

In Stonewall County, drilling had been resumed after coring the Ellenburger from 6,725-30 ft. at Sun Oil Co. 1 Beulah Branch, Section 339-2-H&TC, 17 miles southwest of Aspermont. Recovery in the core was 2 ft. of green to gray shale and brown dolomite.

Eight miles northeast of Aspermont, Roark & Hooker and others 1 C. L. Williams, 6-C-AB&M Survey, was drilling below 5,092 ft. in the Strawn after recovering salt water on a 3-hour drill-stem test from 5,069-92 ft.

In Taylor County, Hiawatha Oil & Gas Co. 1 Frank Antilley, 176-64-H&TC, topped the Fry sand at 4,825 ft., minus 2,701 ft., and was drilled to 4,835 ft. At last report operators were preparing to drill-stem test the section. A previous test from 4,718-62 ft., open 1 hour, recovered 210 ft. of slightly oil and gas-cut mud. Location is 2¼ miles southeast of a recently completed lower Fry discovery drilled by Drilling & Exploration Co., Inc. This well, the 1 S. B. Moore, in 181-64-H&TC, pumped 27 bbl. of oil a day at 5,032-42 ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 AND 7-B) SUCCESSFUL WILDCATS

Archer County: Ted Weiner 1 Olin Calvin, R. Grooms Sur., A-155, 2 mi. SE Anarene, TD 5,227 ft., elev. 1,016 ft., Mississippian pay 5,207 ft., flowed 243.8 bbl. of 42°-gravity oil a day, 9/64-in. choke, plus 146 bbl. water, GOR 450 cu. ft., CP 760 psi., TP 420 psi.

Cooke County: Bridwell Oil Co. 1 J. F. Flusche "C," J. Clark Sur., A-194, 5 mi. N Muenster, TD 1,051 ft., elev. 1,035 ft., sand pay 1,047 ft., pumped 12.4 bbl. of 32°-gravity oil a day.

Jones County: Grisham-Hunter Corp. 1-A J. J. Steele, Blk. 33, Lge. 334, Harrison CSL, 8 mi. NW Anson, TD 2,648 ft., elev. 1,750 ft., sand pay 2,634 ft., flowed 67.6 bbl. of 40°-gravity oil in 5½ hr., ½-in. choke, GOR 122 cu. ft., CP 160 psi., TP 80 psi.

Shackelford County: Kadane-Griffith Oil Co. 1-BB Brazell, 24-8°T&P, 12 mi. E Albany, TD 1,893 ft., pay 1,885 ft., pumped 59 bbl. of 41°-gravity oil a day, some water.

Stephens County: R. W. Fair et al 1 R. L. Glasscock, 80-4-T&P, 6 mi. SE Frankell, TD 1,999 ft., PB 1,761 ft., pay 1,745 ft., pumped 46.6 bbl. of 39°-gravity oil a day, GOR 300 cu. ft.

NORTH CENTRAL TEXAS (DISTRICTS 9 AND 7-B) WILDCAT FAILURES

Archer County: Akin & Dimock 1 E. J. Walsh, Sec. 5, Hooper & Wade Sur., A-233, 5 mi. SE Dundee, dry, TD 4,401 ft.

Clay County: Jack Grace Production Co. 1 L. E. Boren, J. S. Spikes Sur., A-412, 1½ mi. E Shannon, dry, TD 5,875 ft.

George W. Graham 1 Culbertson, Blk. 20, Specht & McCutcheon Subd., 2 mi. W Charlie, dry, TD 1,423 ft. in shale.

Tom B. Medders and J. Newton Huff 1-A E. N. Powell "A,55 Blk. 23, T. J. Belcher Subd., 3 mi. NW Bluegrove, dry, TD 4,725 ft.

Cooke County: J. H. Snowden 1 Myrtle Norman, Joseph Bush Sur., A-107, 1 mi. SW Woodbine, dry, TD 4,538 ft., elev. 734 ft., Ellenburger 4,519 ft.

Fisher County: Stephens Petroleum Co. 1 G. S. Barner, Bastrop CSL, 1 mi. SE Sylvester, dry, TD 5,974 ft., elev. 1,861 ft., Mississippian 5,670 ft., Ellenburger 5,950 ft.

Haskell County: Blackwell Oil & Gas Co. 1 S. L. Chamberlain, S. King Sur., A-305, 11 mi. NE Haskell, dry, TD 4,805 ft., elev. 1,485 ft., Valera 765 ft., base Coleman Junction 1,150 ft., Sedwick 1,280 ft., Dothan 1,390 ft., Saddle Creek 1,705 ft., King sand 2,016 ft., Gunsight 2,387 ft., Bunger 2,555 ft., Home Creek 2,950 ft., Palo Pinto 3,245 ft., Jennings 4,372 ft.

E. L. Wilson 1 W. H. Haynes, NW NW J. Joslin Sur., 5 mi. SE Haskell, dry, TD 3,657 ft., elev. 1,512 ft., reef 3,647 ft.

Jones County: Humble Oil & Refining Co. 1 Mrs. Maga Clark, 25-19-T&P, 4 mi. N Trent, dry, TD 3,472 ft., elev. 1,960 ft.

V. C. Perini, Jr. 1 C. C. Shaw, 14-17-T&P, 12 mi. N Merkel, dry, TD 4,792 ft., Gunsight 2,925 ft., Dothan 2,195 ft., Noodle 2,288 ft., Flippen 2,586 ft., upper Hope lime 2,775 ft.

Montague County: D. H. Bolin 1 Louise Griffith, F. Robertson Sur., A-620, 12 mi. N Nocona, dry, TD 2,949 ft.

Shackelford County: Ungren & Frazier 4 Elma Jackson, 96-12-T&P, 9 mi. N Baird, dry, TD 1,002 ft. in sand.

Taylor County: Moutray-Moore Drilling Co. 1 Sayles & Teaff, Wm. R. Willis Sur. 122, 4 mi. SE Merkel, dry, TD 3,215 ft., elev. 1,822 ft., Flippen 2,342 ft., reef 3,210 ft.

Throckmorton County: Lester & Duffield, Inc. 1 A. Noles, Sec. 251, BBB&C Sur., 4½ mi. SW Throckmorton, dry, TD 5,056 ft., elev. 1,147 ft., Caddo 4,490 ft.

Wichita County: Akin & Dimock 1 T. L. Burnett "A," Sec. 3, SA&MG Sur., A-270, 8 mi. W Iowa Park, dry, TD 2,050 ft.

Wilbarger County: Akin & Dimock 1 S. E. Byrd, 29-5-H&TC, 4 mi. SW Electra, dry, TD 2,052 ft.

Wise County: Cities Service Oil Co. 1 Huffhines, W. Hersee Sur., A-410, 2 mi. SE Chico, dry, TD 7,250 ft., elev. 914 ft., Caddo 5,172 ft., conglomerate 5,470 ft., Marble Falls 6,180 ft., Barnett 6,528 ft., Ellenburger 7,051 ft.

Standard-Fryer Drilling Co. 1 W. Rhoades, Blk. 23, CSL Sur., A-27, 3 mi. NE Alvord, dry, TD 6,500 ft., elev. 901 ft., Brandon Branch 3,965 ft., Kickapoo Falls lime 4,540 ft., Caddo 5,846 ft., Marble Falls 6,471 ft.

Louisiana-Arkansas

Gas-Distillate Discovery Made in Tensas Parish

SHREVEPORT.—David M. Lide and others 1 State-Harris "Unit," gas-distillate discovery in Tensas Parish, located 660 ft. from north and 2,211 ft. from east lines of irregular Section 40-12n-12e, 1 mile southeast of Lake Bruen, was testing a sand section through perforations in casing at 8,897-8,907 ft. First indications of production reported an unestimated amount of gas and distillate. A later report had packer set at 8,800 ft., and in 11½ hours of flowing through 3/16-in. choke, the well produced at the rate of 165 bbl. of 59°gravity distillate per day. flowing tubing pressure was 2,600 psi. Gas-oil ratio was not disclosed.

Atlantic Refining Co.'s 1-F Louisiana Central, SE SE 17-12n-4e, Caldwell Parish wildcat, had drilling under way and was below 2,000 ft. at last report. The new operation was scheduled to test the Tuscaloosa. Formations logged were: Sparta, 964 ft.; Cane River, 1,419 ft.; and the Wilcox at 1,658 ft.

Continental Oil Co.'s 1 P. C. Wideman, 21-21n-7w, Claiborne Parish, was drilling below 5,079 ft., on a 7,000-ft. contract. Top on the Travis Peak was 4,420 ft.

Stanolind Oil & Gas Co. Meadors, 8-22n-

5w, Claiborne Parish, was drilling at 7,426 ft., still in the Travis Peak.

ARKANSAS WILDCAT FAILURES

Bradley County: Burnett Drilling Co. 1 Bradley Lumber Co., 410 ft. N, 460 ft. E of center 14-16s-11w, dry, TD 3,515 ft., elev. 143 ft., Nacatoch 2,510 ft., base Annona 2,994 ft., Cotton Valley 3,320 ft.

Ouachita County: Garland Anthony 1 Browning, NW NW 1-15s-18w, dry, TD 2,930 ft., Nacatoch 1,651 ft., base Saratoga 1,982 ft., base Annona 2,153 ft., Tokio 2,529 ft.

Ormond Corp. 1-A Maude Foster, N½ SW NW 19-15s-18w, dry, TD 5,602 ft.

Southwest Texas

Gas Well Completed In Jim Wells County

CORPUS CHRISTI.—Hickok & Reynolds Royalty Co. has completed the 1 Reynolds & Richardson, W. O. Staples Survey 210, Abstract 439, Jim Wells County, for a gas discovery. Operators perforated from 3,927-33 ft. with 36 shots and the well flowed gas through a 12/64-in. choke with the flowing pressure 1,250 psi. Well is now shut in waiting on potential gage.

Deep Rock Oil Co. has run two drill-stem tests in the 1 Edwin Nagel, recovering condensate on one and oil on the other, and is now drilling ahead at 7,828 ft. First test was run from 7,676-83 ft. for 20 minutes. Through ¼-in. choke, recovery was part of water cushion, 50 ft. of condensate and then the rest of the water cushion which was condensate-cut. Second test, which was run from 7,710-18 ft., using ¼-in. choke, recovered 440 ft. of condensate-cut water cushion, 60 ft. of clean oil and 60 ft. of water cut with oil. Pressure built up to 145 psi. in 30 minutes, was shut in for 10 minutes, and had a final gage of 150 psi. This new producer is located in the Mumford House Survey, Abstract 226, DeWitt County.

Pontiac Refining Co. is at a total depth of 3,206 ft. in the 1 Roy Yeager, wildcat 5½ miles west of Hebbronville, Jim Hogg County, and have set 5½-in. pipe at 3,110 ft. Operators perforated from 3,079-99 ft. and are completing the well on pump for an oil field discovery. It is located in Survey 165, approximately 1½ miles west of the Yeager field.

Tiger Minerals, Inc., have set production casing in the 1 Lucille Gruy Estate, wildcat 24 miles southwest of Freer, Duval County, and are preparing to complete for a new discovery. A drill-stem test in the Cole sand recovered 70 ft. of oil and mud.

The 38 new locations include 11 wildcat starts, one each in Duval, Jim Hogg, Jim Wells and Webb counties, 2 each in Nueces and San Patricio counties and 3 in Starr County. There were 4 successful exploratory wells completed, 1 each in Atascosa and San Patricio counties and 2 in Nueces County, while 11 were dry, one each in Bexar, Caldwell, Jim Hogg, Kleberg, San Patricio, Starr, and Webb counties, and 2 each in Duval and Jim Wells counties.

SOUTHWEST TEXAS (DISTRICTS 1 AND 4) SUCCESSFUL WILDCATS

Atascosa County: Oil discovery— LaParita Oil Co. 1 Tom Ventrcek, John Neal Sur. 1,190, 5 mi. SW of Jourdanton, top pay 1,529 ft. (Carrizo sand), TD 1,535 ft., perf. 1,531-34 ft., IP: 47 bbl. oil per day on pump, 29° gravity.

Nueces County: New pay at Chapman Ranch—The Chicago Corp. 1 Chapman Ranch, Sec. 44, Laureles Farm Tract, top pay 7,366 ft., TD 7,750 ft., perf. 7,366-74 ft., IP: 53 bbl. oil per day, on pump, 41° gravity.

Gas discovery: The Chicago Corp., Sullivan & Garnett 1 Jonas Weil, J. H. Gallagher Sur. 318, A-986, 2 mi. NE of Baldwin field, top pay 9,088 ft., TD 10,-

Pritchard's

NEW Quintair*

AIR COOLED HEAT EXCHANGER

For Dependable, Efficient Cooling or Condensing of Liquids, Gases or Vapors

- Lower Installed Cost
- Higher Efficiency
- Fewer Parts to Assemble
- Lower Maintenance Costs
- Lower Operating Costs
- Many Industrial Uses

*Registered Trade Name

Write for FREE Bulletin No. 11.0.080

EQUIPMENT DIVISION

J.F. Pritchard & Co.

Dept. No. 26 908 Grand Ave., Kansas City 6, Mo.

District Offices:
CHICAGO • HOUSTON • NEW YORK • PITTSBURGH • TULSA • ST. LOUIS
Representatives in Principal Cities from Coast to Coast

EACH WAY-EVERY DAY

DAILY Flights to

VENEZUELA and JAMAICA!

Chicago & Southern Air Lines' fleet of 4-motored Douglas Skymasters now offers seven-days-a-week service through the Houston and New Orleans gateways to Caracas, Kingston, and Havana. Flights each way every day provide one-plane service from the Great Lakes to the Venezuelan oil capital. Ask your travel agent or nearest C&S ticket office.

CHICAGO & SOUTHERN AIR LINES

General Offices, Memphis, Tenn., U.S.A.

C★S

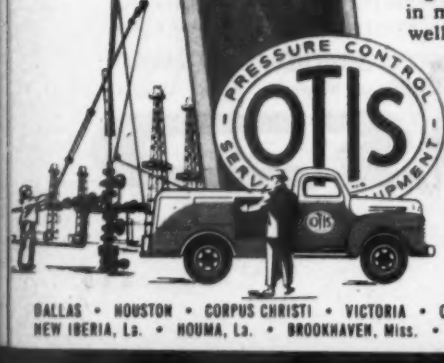
XUM

Over 12,000,000 feet of Tubing Surveyed for CORROSION

with the **OTIS TUBING CALIPER**

without killing the well or pulling the string for surface inspection

Thousands of barrels of oil are lost annually due to leaks caused by internal corrosion in the tubing and well-head fittings. Wells in highly-corrosive areas have been known to collapse entirely, resulting in expensive salvaging operations and a costly loss of production. It's significant that every year, more and more operators are obtaining surveys of recently-completed wells in order to have a comparison with later surveys to determine the rate and extent of internal tubing corrosion. Otis Caliper Crews have surveyed more than 12,000,000 feet of tubing—*under pressure, without killing the wells or pulling the strings*—and, when necessary, immediately furnished at the well-sites a preliminary analysis of severely corroded joints. Contact the Otis office nearest you for detailed information on Otis Tubing Caliper services, and a sample *"Report of Tubing Corrosion Survey"* and a copy of *"Foundation for Failure,"* a new folder on tubing corrosion. Remember, too, that the entire Otis organization and its staff of pressure control engineers are always available for expert consultation at no obligation. We urge you to use the experience we've gained in more than two decades of specialized oil well service work—*under pressure.*



OTIS PRESSURE CONTROL, INC.

Box 7206 • L D 131 • TWX DL-220 • DALLAS

DALLAS • HOUSTON • CORPUS CHRISTI • VICTORIA • ODESSA • FALFURRIAS • LONGVIEW • OKLAHOMA CITY
NEW IBERIA, La. • HOUMA, La. • BROOKHAVEN, Miss. • LOS ANGELES • BOLIVAR, N. Y. • CARACAS, Venezuela

205 ft., perf. 9,088-9,112 ft., 20,000,000 cu. ft. of gas per day, open flow, SIP 3,915 psi.

San Patricio County: New pay at Portilla—Superior Oil Co. 7 Minnie S. Welder, C. J. Francisco & E. Portilla Sur., A-25, top pay 7,416 ft., TD 8,850 ft., perf. 7,416-21 ft., IP: 261 bbl. oil per day, 10/64-in. choke, TP 1,300 psi.

SOUTHWEST TEXAS (DISTRICTS 1 AND 4) WILDCAT FAILURES

Bexar County: M. L. Wise and others 1 W Frieshenhahn, Fernando Rodriguez Sur. 6, 6 mi. S of San Antonio, dry, TD 1,208 ft.

Caldwell County: Ameer Oil Co. 1 Donald E. Callihan, John R. Miller Sur., 7½ mi. SE of Lockhart, dry, TD 2,551 ft.

Duval County: Jake L. Hamon & Edwin L. Cox 1 Alonzo Taylor, El Mesquite Grant, 11 mi. W of Realitos, dry, TD 3,791 ft.

Sid Katz and others 2 W. R. Peters, B. Garcia Sur. 40, 12 mi. S-SW of Freer, dry, TD 3,410 ft.

Jim Hogg County: Cam Corp. 1 Fannie L. Downs, El Javalia Grant, 30 mi. S of Hebbronville, dry, TD 2,551 ft.

Jim Wells County: Gaylord H. Chizum 1 John A. Mikus, Los Presenos de Abajo Grant, 7 mi. NE of Alice, dry, TD 3,642 ft.

W. E. Fox, Trustee, 1 Richard C. Miller, Casa Blanca Grant, A-296, 3 mi. SE of Orange Grove, dry, TD 5,808 ft.

Kleberg County: Curtis Singleton Drilling Co. 1 W. K. Cumberland, Blk. 15, Sec. 22, Kleberg Town & Improvement Co., 1½ mi. SE of Kingsville, dry, TD 8,339 ft.

San Patricio County: Youngblood Well Service 1 Luling Foundation, Geo. H. Paul Subd. of J. J. Welder Ranch, dry, TD 2,589 ft.

Starr County: J. L. Crump & Clark Fuel Producing Co. 1 Pedro Gonzales, Porcion 59, Mier Jurisdication, dry, TD 7,514 ft.

Webb County: Freeport Sulphur Co. 1 Thomas Dix, J. Poitevent Sur. 103, A-1,641, 22 mi. NE of Laredo, dry, TD 7,514 ft.

Eastern Texas

New Wildcat Staked In Freestone County

DALLAS.—A new Woodbine wildcat for Freestone County has been staked by Humble Oil & Refining Co. The proposed 4,500-ft. test was to be started immediately. Location is on a 460-acre tract in the A. M. Sloan, R. C. Epps, and Hugh Shepherd Surveys, some 3 miles northwest of Fairfield townsite. Drill site is 4,000 ft. north of 1 Ficklen & Williams, a small gas well completed last year, which had the Woodbine at 4,217 ft.

Humble's 1 Ball, deep test in the Red Lake field, 9½ miles southeast of Fairfield, had 5½-in. casing set at 8,494 ft. for completion attempt. Total depth was 9,496 ft., in the Travis Peak topped at 9,259 ft. by samples.

B. B. Orr 1 J. W. Stagner, second well for the operator in the northeast extension area of the Pine Mills field of Wood County, rated 393 bbl. of 24.5°-gravity oil a day through ¼-in. choke on tubing, from 24 casing shots at 4,783-92 ft. in the sub-Clarksville. Location is 550 ft. south of the 1 Childress, discovery well.

In Anderson County, Bobby Manziel 1 M. A. Davey, Washington Lewis Survey, 16 miles of Elkhart, was drilling below 5,300 ft.

In Falls County, E. W. Jarman 1 Mrs. Lola Garrett, M. Hunt Survey, 1½ miles west of Kosse, had total depth at 5,568 ft. and was testing. Five-inch casing was set at 4,154 ft.

Joseph Thompson 3 Easter Doherty, Hill

County wildcat 2½ miles northeast of Mt. Calm, perforated 20 shots from 658-668 ft. and bailed oil at the rate of 65 bbl. per day. After installing pump, the well made 6 bbl. of oil an hour, plus some salt water. Total depth was 1,205 ft.

EAST TEXAS (DISTRICTS 5, 6, AND 6-P) WILDCAT FAILURES

Denton County: J. M. Hickey & Sons 1 M. Hanna & W. C. Collier, J. B. Reed Sur., A-1,086, ½ mi. SE Bolivar, dry, TD 1,900 ft., no shows.

James Papadakis 1 H. C. Barthold, T. Polk Sur., A-997, 2 mi. NE Krum, dry, TD 4,215 ft., elev. 726 ft.

Falls County: E. L. Hill and W. A. Brian 1 Charley Becker, 3 mi. NE Lott, A. Montgomery Sur., dry, TD 1,350 ft.

Upshur County: Barney Carter 1 J. B. Johnson, J. S. Phillips Sur., 11 mi. W, 1½ mi. S Gilmer, dry, TD 5,500 ft.

Appalachian Field

Wildcat Operations Being Conducted on Large Scale

PITTSBURGH. — Wildcat drilling operations are being conducted on a large scale in Clinton County, Pennsylvania. In Leidy Township, Leidy Prospecting Co. 2 Calhoun Estate, elevation 1,494 ft., was brought in in the Oriskany sand, which was topped at 6,172 ft., with gas gaging an estimated 30,000,000 cu. ft. per day with rock pressure of 3,825 psi. Approximately 14 wells are drilling in this section. In Georges Township, Fayette County, Southwest Pennsylvania, Orville Eberly and others 1 N. E. Murphy, elevation 2,560 ft., is shut down at 7,790 ft. to run casing. The top of the chert was logged at 7,667 ft. with gas at 7,787-7,790 ft. testing 30,000 cu. ft. Unity Township, Westmoreland County, Peoples Natural Gas Co., 1-3921 Fred Musnug, elevation 2,100 ft., is drilling at 2,485 ft. Napier Township, Bedford County, South Penn and others-Snee & Eberly 1 Jesse B. Miller, elevation 1,666 ft., has not shown any further progress. The depth of the hole is 7,255 ft.

Five new locations in Southwest Pennsylvania were reported during the past week: Burrell and Plumcreek townships, Armstrong County; Buffalo Township, Butler County; Richhill Township, Greene County; and Amwell Township, Washington County.

Dry Fork district, Tucker County, West Virginia, Cumberland and Allegheny Gas Co. 1-A-425 Jason Harmon, elevation 3,304 ft., was drilled through the Oriskany sand 8,413-8,561 ft and drilling is at 8,575 ft. Steele district, Wood County, United Fuel Gas Co. 6588 L. E. Blair, elevation 863 ft., was located. It is on the Belleville Quadrangle 1.5 miles south of Latitude 39 degrees, 05 minutes and 2.65 miles west of Longitude 81 degrees, 30 minutes; W. & B. Gas Co. is moving in at 1 Elbert and Myrtle Hale, elevation 373 ft., 0.6 mile south of Latitude 39 degrees, 05 minutes and 2.95 miles west of Longitude 81 degrees, 30 minutes. Pocatalico district, Putnam County, South Penn Oil Co. 2 Frank A. Hardy resulted in 2,447,000 cu. ft. of gas in the Oriskany sand with rock pressure of 1,190 psi. in 36 hours, total depth 4,926 ft. Adkin district, McDowell County, Godfrey L. Cabot, Inc., completed a good shallow sand gas well, 31-1309 Pocahontas Land Corp., gaging 2,176,000 cu. ft. after shot in the Berea sand. total depth 4,318 ft.

Fifteen new locations in West Virginia were reported during the past week: Union district, Jackson County; Elk district, Kanawha County; Freeman Creek district, Lewis County; Triadelphia district, Logan County; Sandhill district, Marshall County; Harvey and Lee districts, Mingo County; Jefferson district, Pleasants County; Curry and Teays Valley districts, Putnam County; Union district, Wayne County; and Steele district, Wood County.

Oklahoma

Cleveland County Wildcat Finds Dolomite Production

WITH a good producer virtually assured in the Dolomite zone, Gulf Oil Corp. and Faultline Oil Co. are coring ahead for a look at the Wilcox sand at their 1 Wilson Estate, NE NW NE 27-10n-1e, a rank wildcat test in the northeast corner of Cleveland County.

Top of the Dolomite zone was logged at 6,077 ft. with surface elevation of the test being 1,143 ft. Cores at the top got lime and dolomite, bleeding oil. After coring to 6,116 ft. a drill-stem test was made, taking in an interval from 6,069 ft. Tool was open 1 hour, during which time the well flowed gas gaged at the rate of 724,000 cu. ft. per day with a flowing pressure of 500 psi. Shut in, the well built up a pressure of 2,500 psi. within 10 minutes. In the breakdown following the test, 4,928 ft. of 38.2°-gravity oil and 40 ft. of oil and gas-cut mud was recovered.

The discovery is located about 8½ miles southwest of Newalla, Oklahoma County. Nearest production is in the Union Point-Shawnee Lake area about 5 miles to the east in Pottawatomie County.

Greenbriar Oil Co. has found a second and deeper potentially productive horizon, the Joins zone, in its 1 Wentzell, NE NW NW 33-8n-3w, northern McClain County, a short distance south and west of the Cleveland County line. The Joins zone was topped at 11,496 ft. A drill-stem test at 11,515-25 ft. with tool open 98 minutes got a good flow of gas, starting within 41 minutes after the tool was opened, and yielded 9,600 ft. fluid in the breakdown. The fluid consisted of 1,000 ft. of water cushion and 8,600 ft. of clean 42.7°-gravity oil. Indicated bottom-hole flowing pressure was 2,375 psi. Shut in, pressure built up to 4,750 psi. in 10 minutes.

Good productive potentialities previously had been found in the Bromide sand topped at 10,674 ft., and in which more than 75 ft. of effective saturated sand was logged. In a succession of drill-stem tests in that section extending to a total depth of 10,771 ft., the well flowed at rates up to 50 bbl. of clean oil per hour.

R. S. Shade has established a new pool for Pawnee County at his 1 Colclazier, E½ NE SW 15-22n-5e, 3½ miles northeast of Pawnee, the county seat. Producing from both the Misener and Wilcox sands, the well flowed 289 bbl. of oil through open casing in a 24-hour production test. With tubing run, the well flowed 12 bbl. per hour through ¾-in. choke. Oil has a gravity of 45°. Misener sand was topped at 3,534 ft. and the Wilcox sand at 3,540 ft. Total depth is 3,544 ft. with 5½-in. casing at 3,529 ft.

Nearest production is the one-well Pawnee Reservation pool, 3 miles to the south. Nearest other production is in the Ralston area, 8 miles north.

The area 8 miles west of Coalgate, Coal County, is being revived with an indicated gas-distillate producer. The potential well is J. A. Roberson 1 Pope, C W½ SW NE 34-1n-9e, which during a drill-stem test at 7,160-82 ft. in McLish sand, topped at 7,165 ft., flowed first at an estimated rate of 12,000,000 cu. ft. of gas per day through ½-in. choke. Turned through a separator, the flow was gaged at the rate of 8,000,000 cu. ft. of gas and 125 bbl. of distillate per day. The test extended over a period of 3 hours. Gas was at the surface within 35 seconds after the tester was opened.

This discovery is about ½ mile south from a somewhat smaller gas well, not now producing, which the same operator completed in 1948. That well produced from a zone at 6,945-55 ft., with the top of McLish reported at 6,855 ft. Nearest other production is the Centrahoma pool, about 6 miles to the north. Pay zone of that pool is the Cromwell sand.

OKLAHOMA SUCCESSFUL WILDCATS

Jefferson County: Amerada 1 Hefner, SW SW NW 4-4s-4w, elev. 916 ft., flowed 203 bbl. of 32.2°-gravity oil per day from conglomerate sand at 2,662-2,700 ft., TD 3,202 ft.

Lincoln County: McLean, Allen, Allied Material and Halko 1 North, SW SE NW 9-13n-5e, 2½ mi. NE of S Sparks, elev. 824 ft., flowed 178 bbl. of 40.8°-gravity oil per day from Prue-at 3,508-24 ft., TD.

Logan County: Cities Service and Jordan 1 Koehn, NE SE SE 8-17n-1w, 1 mi. E. Guthrie pool, elev. 982 ft., pumped 19 bbl. of oil per day from Skinner at 4,930-36 ft., TD 5,487 ft.

Noble County: Howell & Howell 1 Jirous, SW SW SW 31-24n-1e, 1 mi. SW of NE Longview, elev. 946 ft., flowed 190 bbl. of 42°-gravity oil per day from Burbank at 4,303-69 ft., TD 4,400 ft.

Oklahoma County: Anderson & Prichard 1 Lehmer, C NE NE 13-12n-2w, ½ mi. S Munger, elev. 1,200 ft., flowed 44 bbl. of oil per day from Red Fork at 6,065-92 ft., 675,000 cu. ft. of gas per day from conglomerate at 5,453-80 ft., TD 6,220 ft.

Stephens County: Davie et al., 1 McKinley, SW SW NW 34-2s-6w, elev. 1,030 ft., pumped 25 bbl. of 37°-gravity oil per day from shaly sand at 2,474-2,500 ft., TD 2,583 ft., old well worked over.

OKLAHOMA WILDCAT FAILURES

Comanche County: Sid Biles 2 fee, NW NW NE 20-2n-11w, dry, TD 500 ft., no tops reported.

Cotton County: Davis 1 Tabby-to-sav-it, SE SE SW 20-2s-12w, dry, TD 2,417 ft., elev. 1,030 ft., Thomas sand 1,718 ft., Megargel lime 1,796 ft., Burk sand 1,976 ft., Canyon 2,130 ft., Arbuckle 2,390 ft.

Creek County: Mid-Continent 1 Prewitt, NE NW SW 18-16n-7e, 1¾ mi. SW Cushing, dry, TD 3,469 ft., elev. 932 ft., Hogshooter 1,665 ft., Layton 1,686 ft., Oswego 2,585 ft., no Prue, Skinner 2,786 ft., Bartlesville 2,910 ft., no Mississippi lime, basal Pennsylvanian-Woodford 3,235 ft., Sylvan 3,263 ft., Viola 3,317 ft, dense 3,351 ft., dolomite 3,357 ft., sandy dolomite 3,384 ft., Wilcox 3,391 ft., shale 3,467 ft.

Kay County: Ramsey et al., 1 Koehler, SW NE SW 12-27n-1e, ¾ mi. W of W Banner district, dry, TD 3,755 ft., elev. 1,987 ft., Osage-Layton 2,900 ft., Big lime 3,200 ft., Oswego 3,330 ft., lime 3,619 ft., Red Fork 3,650 ft., no Skinner.

Harper-Turner 1 Buckles, SE SE SW 6-27n-2e, N Banner district, dry, TD 3,731 ft., elev. 1,105 ft., Layton 2,790 ft., Checkerboard 3,093 ft., Big lime 3,215 ft., Oswego 3,240 ft., Bartlesville 3,542 ft., Mississippi chat 3,674 ft.

Dillard 1 Kupka, SW SW SE 29-26n-2e, 1¼ mi. N Ponca City, dry, TD 1,653 ft., elev. 972 ft., sand lime 670 ft., and 760 ft., sand 1,509 ft.

Latimer County: Zucker 1 Old Mack Coal Co., C SE 17-6n-21e, 1½ mi. W gas in Red Oak, dry, TD 6,512 ft., elev. 635 ft., shale and sand 1,620 ft., sand and shale 1,864 ft., shale and sand 2,321 ft., shale 2,360 ft., sand and shale 2,440 ft., sand 2,925 ft., 4,050 ft., 5,017 ft., 6,098 ft., and 6,355 ft., sandy shale 6,453 ft.

Lincoln County: Davidor & Davidor 1 State, NW NW SE 16-13n-2e, 4 mi. NE Jones, dry, TD 5,288 ft., elev. 996 ft., Oswego 4,632 ft., Prue 4,688 ft., Skinner 4,868 ft., Red Fork 4,920 ft., Bartlesville sand 5,030 ft., basal Pennsylvanian-Mayes 5,160 ft., Woodford 5,190 ft., Hunton 5,280 ft.

Dirickson-Lewis Drilling and Sunray 1 Greenfield, SW SW SW 2-15n-4e, 2½ mi. w of NW Kendrick, dry, TD 4,106 ft., elev. 858 ft., Oswego 3,574 ft., Prue 3,644 ft., Verdigris 3,686 ft., lime 3,856 ft., Red Fork 3,906 ft., Inola 3,986 ft., Bartlesville 3,994 ft., lime 4,102 ft.

Murray County: Nye 1 Daugherty-Fariss, NW NW NW 4-2s-3e, dry, TD 2,495 ft., elev. 1,021 ft., Bromide sand 640 ft.,

XUM

McLish 1,135 ft., Oil Creek sand 1,865 ft., Joins 2,110 ft., Arbuckle 3,465 ft.

Noble County: Oliphant 1 Murdock, NE SE NW 25-23n-2w, 2 mi. E Billings, dry, TD 4,901 ft., elev. 982 ft., Pawhuska 2,205 ft., Oread 2,592 ft., Endicott 2,710 ft., Lovell lime 2,850 ft., Tonkawa lime 2,965 ft., Tonkawa sand 2,980 ft., Avant 3,284 ft., upper Layton 3,640 ft., Hogshooter 3,780 ft., lower Layton 3,835 ft., Checkerboard 4,035 ft., Big lime 4,110 ft., Oswego 4,200 ft., Verdigris 4,340 ft., lime 4,430 ft., Mississippi chat 4,560 ft., Mississippi lime 4,588 ft., base Mississippi lime 4,723 ft., Misener 4,764 ft., Viola 4,768 ft., dense 4,770 ft., dolomite 4,792 ft., Wilcox 4,802 ft., second Wilcox 4,888 ft.

Warren Oil Corp. 1 Taylor, NW NE NE 6-21n-1w, ¾ mi. S Fourdee, dry, TD 5,256 ft., elev. 1,085 ft., Layton 3,800 ft., Checkerboard 4,252 ft., Mississippi lime 4,850 ft., porosity 4,874 ft., Woodford 5,054 ft., Viola 5,104 ft., sandy dolomite 5,148 ft., Wilcox 5,181 ft., Marshall 5,221 ft., second Wilcox 5,250 ft.

Oklahoma County: Kingwood Oil Co. 1 Larsen, NE NE SW 11-14n-2w, ⅝ mi. NE Coffee Creek, dry, TD 6,269 ft., elev. 1,138 ft., Avant 4,163 ft., Hogshooter 4,643 ft., Checkerboard 4,990 ft., Oswego 5,445 ft., Prue 5,573 ft., Verdigris 5,614 ft., lime 5,673 ft., Red Fork 5,712 ft., Woodford 5,781 ft., Misener 5,850 ft., Hunton 5,853 ft., Sylvan 5,894 ft., Fernvale 6,000 ft., first Wilcox 6,154 ft., second Wilcox 6,266 ft.

Seminole County: Toklan Producing Co. 1 Reed, NW NW SE 10-6n-7e, 1¾ mi. NE of S Wofford, dry, TD 4,511 ft., elev. 845 ft., Senora lime 1,797 ft., lime 2,727 ft., Booch 2,850 ft., Gilcrease sand 2,997 ft., Union Valley 3,137 ft., Cromwell 3,245 ft., second Cromwell 3,417 ft., Mayes 3,993 ft., Woodford 4,093 ft., Sylvan 4,320 ft., Viola 4,365 ft., dense 4,425 ft., dolomite 4,441 ft., Wilcox 4,494 ft.

Tillman County: Dorian 1 Johnson, NE NE SW 12-3s-17w, dry, TD 3,747 ft., elev. 1,188 ft., Canyon lime 3,254 ft.

"Central" refers to the Control Centers which are manufactured by Nelson Electric Mfg. Co., Tulsa, Okla.
The basic unit of "Central" is a prefabricated, vertical section. Any number of such sections can be placed side by side — to provide the efficient grouping of motor starters, circuit breakers, transformers, etc.
"Central" units are good-looking, compact and easy to install. For details, write —
NELSON ELECTRIC MFG. CO.
Tulsa • Oklahoma
Photo shows "Central" units containing size 1 and 2 combination starters and two Type KB (600 Amp., 600 Volt, 25,000 Amp. I.C.) drawout breakers.

NELSON Electric MANUFACTURING CO.

Kansas

Stafford County Gets New Producing Area

PETROLEUM, INC., is opening another new producing area in northern Stafford County, where its 1-B Brown, NE NE NW 7-21-13, swabbed 500 bbl. of oil in 24 hours while testing the Lansing-Kansas City lime. The test was made following a 6,000-gal. acid treatment. Previously the well swabbed at the rate of 8 bbl. per hour.

Production is through casing perforations at 3,446-59 ft. with top of the Lansing at 3,329 ft. (—1,416 ft.). Hole had been carried to the Arbuckle, logged at 3,632 ft. (—1,719 ft.). The latter zone failed to show commercial production. Nearest other production is in the North Pundsack pool, 2 miles to the south.

Anschutz Drilling Co.'s prospective discovery well, 1 Batchman, SE SE SE 19-20-12, southeastern Barton County, swabbed at the rate of 5 bbl. of oil per hour in initial tests of showings found in Arbuckle lime at a total depth of 3,480 ft. The formation was topped at 3,463 ft. (—1,604 ft.), and has casing bottomed 1 ft. in the pay. Open hole was treated with 2,200 gal. of acid. The location is 1 mile northeast of the East Rolling Green pool and 2 miles southeast of the Sunny Valley pool.

Berwick & Isern 1 Carmichael, SE SE SE 33-9-17, ½ mile west of the Nellie pool, in the Plainville area, Rooks County, is showing for a good Arbuckle lime producer after swabbing at the rate of 40 bbl. of oil per hour in initial tests. Arbuckle is at 3,513-27 ft. (—1,417-31 ft.) with hole open from 3,515 ft. Since the Nellie pool produces from the Lansing-Kansas City, this well opens either a new pay zone or a new pool.

Alpine Oil & Royalty Co. and B & B Drilling Co. 1 Fischer, SW SW SE 33-1n-18w, new pool-opener located just across the Phillips County, Kansas, line in Harlan County, Nebraska, is reported to have produced approximately 90 bbl. of oil in the first 13 hours after being put on the pump. Pumping tests continue. Production is from Lansing lime, in which casing, run to 3,450 ft., is perforated at 3,366-75 ft. Pay zone was given a 2,000-gal. acid treatment. The new pool is about 5½ miles north of the Huffstutter pool, Phillips County, Kansas, which until now has been the most northerly pool along the Central Kansas Uplift. The latter feature, which extends in a southeasterly-northwesterly direction across central and western Kansas, becomes known as the Chadron Arch as it extends northward across Nebraska.

H. H. Blair has proved a new producing spot ½ mile southwest of the West Atherton pool and a mile northwest of nearest production in the Gorham pool, Russell County, Kansas. Producing from the Lansing topped at 3,051 ft. and drilled to 3,074 ft., the well was given a potential rating of 46 bbl. of oil per day on the pump. It is separated from the West Atherton pool by dry holes, and appears to be a new pool rather than an extension. It has been named the Coop pool.

KANSAS SUCCESSFUL WILDCATS

Graham County: Hartman 1 Webster, NE NE NE 9-10s-21w, flowed 299 bbl. of oil per day from Lansing at 3,696-3,704 ft., TD 3,847 ft., elev. 2,258 ft.

Rice County: Brunson 1 Yeost, CEL SE SW 28-20s-8w, 873,000 cu. ft. of gas per day from conglomerate topped at 3,278 ft., shut in. TD 3,469 ft., elev. 1,668 ft.

KANSAS WILDCAT FAILURES

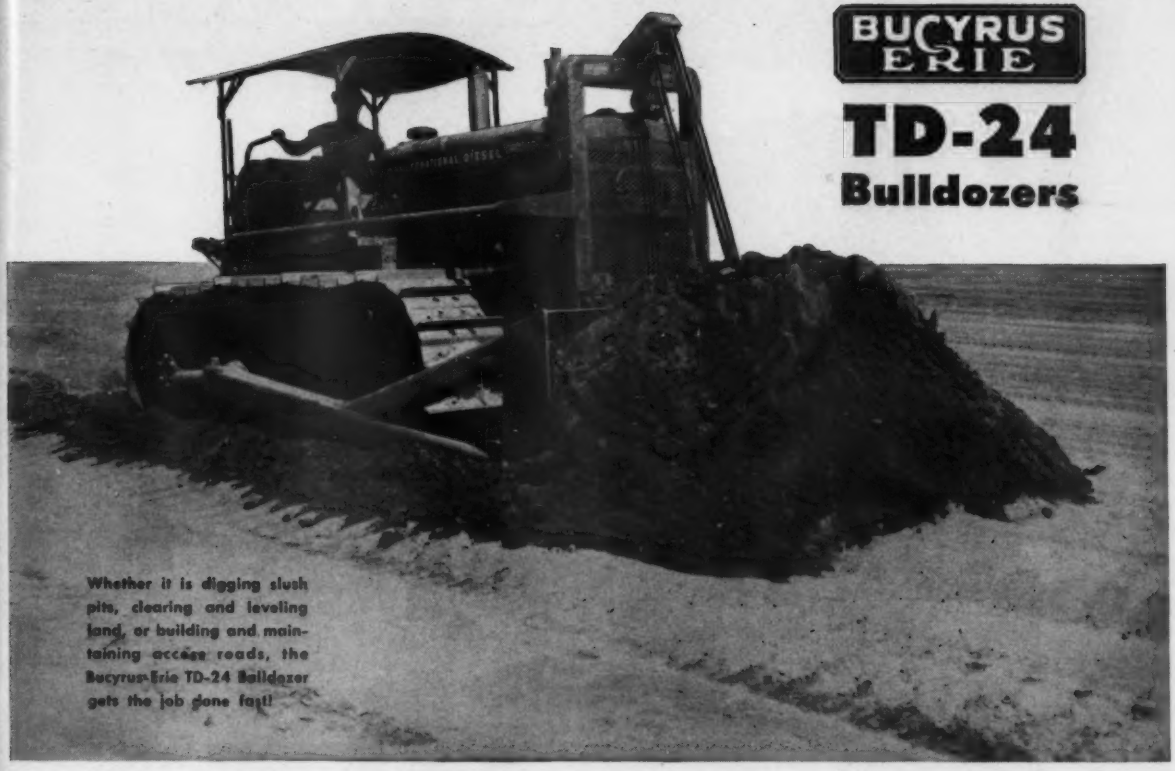
Barton County: Lauck 1 Wittmer, NE SE SE 12-16s-13w, dry, TD 3,396 ft., elev.

XUM

XUM

BUCYRUS ERIE

TD-24 Bulldozers



Whether it is digging slush pits, clearing and leveling land, or building and maintaining access roads, the Bucyrus-Erie TD-24 Bulldozer gets the job done fast!

MAKE *Quick* WORK OF OIL FIELD JOBS

By Fully Utilizing the International TD-24 Tractor. Bucyrus-Erie Bulldozers are engineered from the ground up for this champion of tractors. They provide the design, strength and control to apply the tractor's exceptional speed, power and working ability.

By Helping the Operator Get More Done. There are no obstructions on the sides of the tractor to limit the operator's vision. He always sees what the blade is doing, for faster, safer working. Absence of overhead structures lowers center of gravity for greater stability on sideslopes, lets the operator work with greater assurance.

By Spending More Time Working. Bucyrus-Erie Bulldozers are strongly built to keep working — and they do! Lubrication points are easily reached — are placed for quick access in servicing. No extensive teardown is necessary for maintenance.

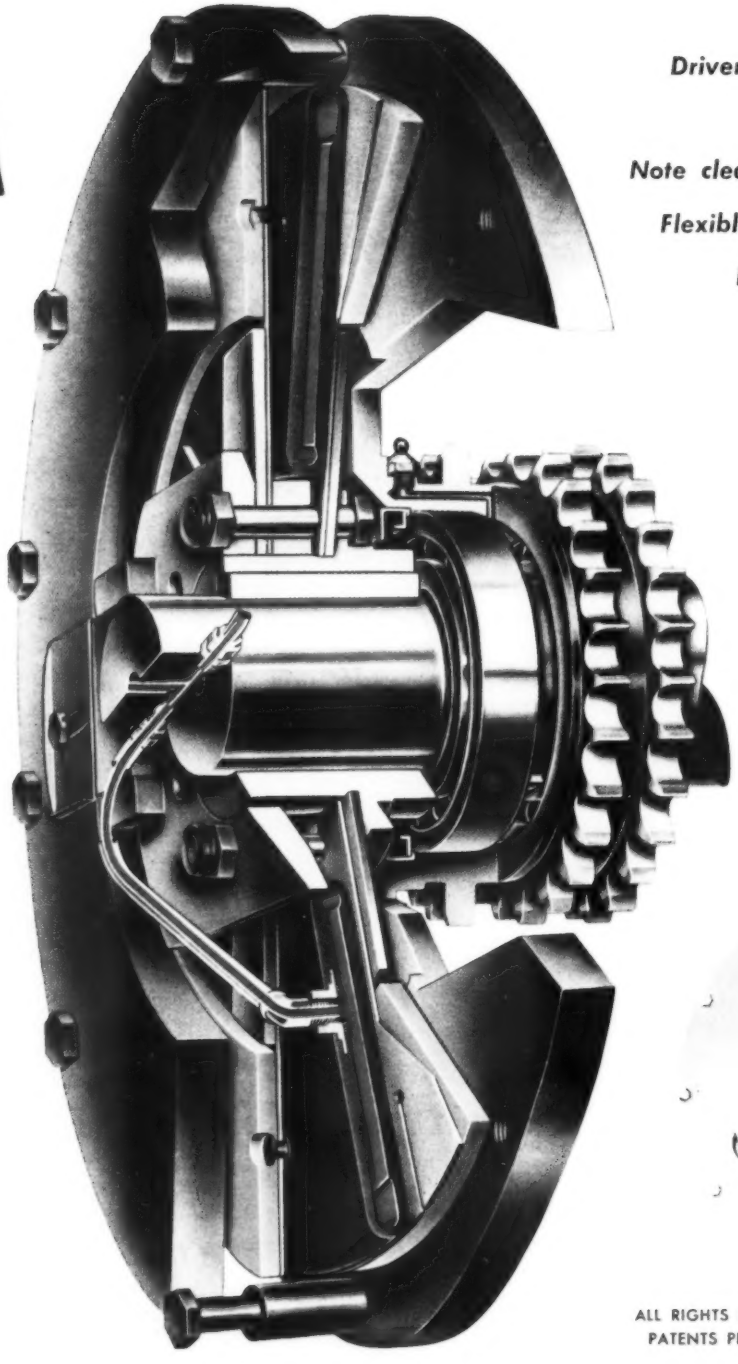
Watch a TD-24 Bulldozer at work — and see for yourself what it can do for you. Get complete information from your International Industrial Tractor distributor.

29STSO

BUCYRUS-ERIE COMPANY SOUTH MILWAUKEE WISCONSIN

XUM

The New CARDWELL



Driven member friction plates

Lock-in plate

Note clearance when disengaged

Flexible plate driving members

Insulating friction facings

Air tube

Air inlet

Disengaging springs

Bearing oiler

Hub

Key

Shaft

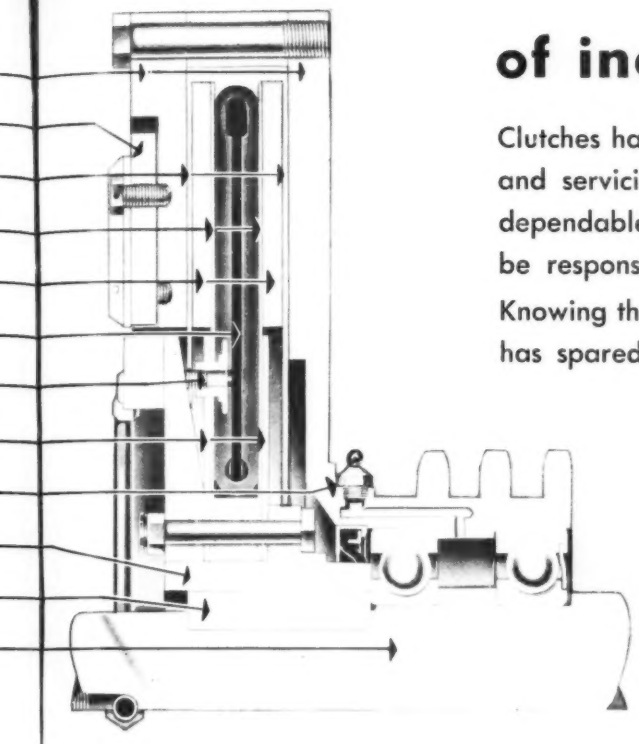
ALL RIGHTS RESERVED
PATENTS PENDING

to manufacturers of oilfield rigs

We are prepared to engineer and build these "Flex-Disc" clutches for installation in your new rigs at a very low cost, without royalty charges. Write Dept. 82 for details.

XUM

"FLEX-DISC" CLUTCH



of industry-wide interest

Clutches have always been the biggest problem of drilling and servicing rigs of every manufacturer. They must be dependable under extremely hard usage because they can be responsible for great losses.

Knowing these facts, the Cardwell Manufacturing Company has spared no expense or effort in developing this new Cardwell "Flex-Disc" clutch.

Every rig owner is fully aware of the importance of friction clutches in his rig and their need for continual adjustment and attention — or clutch failure results. THE CARDWELL "FLEX-DISC" IS THE ANSWER TO EVERY RIG OWNER'S FRICTION CLUTCH PROBLEMS.

special features

There are no floating rings with gear teeth to become clogged with worn-off friction material (clogged gear teeth cause clutches to burn up).

No adjustments are needed.

The "Flex-Disc" clutch requires 20% less shaft space than the shortest clutch of any other design.

The cost is lower than any other air clutch of the same capacity.

A "lock-in" device is provided to use in case of air failure.

Simple in construction . . . can be fully assembled in a few minutes without special tools.

five years' test

These clutches have been test operated under load for a period equal to five years' field use without failure, without repair, and without adjustment.

notice to owners of Cardwell rigs

These new "Flex-Disc" clutches are available as replacements for air clutches, in certain applications, on Cardwell rigs now in use. Owners please write Service Department, Cardwell Manufacturing Company, Inc., Wichita, Kan., for information.

CARDWELL

REG. U.S. TRADE MARK PAT. OFFICE

THIS TRADE MARK INSURES HIGHEST QUALITY AT LOWEST PRICE

CARDWELL MFG. CO. INC.

P. O. Drawer 2001 . . . Long Distance Telephones 128 — 129 — 130

Cable Address: "ALL STEEL," Wichita — "CARDSTEEL," New York

Wichita, Kansas, U.S.A.

[illegible]'s reputation in all fields for building "Tough Iron" comes from the use of alloy steels and heat-treatment. This "know how" cannot be copied.

XUM

SOUND WELDS RING THE BELL NEAR LIBERTY, MISSISSIPPI

...in Another Republic Electric Weld Pipe Line 50 Miles Long

1. **UNIFORM ROUNDNESS**—Pipe ends match perfectly . . . speed construction . . . cut costs.
2. **UNIFORM DIAMETER**—No "off-size" lengths to cause welding difficulties at joints.
3. **UNIFORM WALL THICKNESS**—Absolute dependability throughout every inch of length and circumference.
4. **UNIFORM HIGH YIELD STRENGTH**—Permits building higher pressure lines, utilizing design values to fullest advantage.
5. **UNIFORMLY STRAIGHT** lengths line up evenly . . . go into the ditch freely.
6. **EASY TO BEND**—High ductility steel makes bending in the field easy.
7. **EASY TO WELD**—Low carbon steel welds readily . . . makes sound joints.
8. **FREEDOM FROM SCALE**—Insures against clogged valves, contamination of petroleum products.
9. **LONG LENGTHS**—Reduces number of joints . . . makes jobs move with longer strides.
10. **INSPECTED INSIDE AND OUT**—Republic Electric Weld Line Pipe is made from flat-rolled steel both sides of which are closely inspected. Thus, you are assured that the surface which becomes the inside wall when formed into pipe is free from hidden defects.

Freedom from welding difficulties helped speed construction of this 12-inch line from Liberty, Miss., to Baton Rouge, La. Because Republic Electric Weld Line Pipe is uniformly round and uniform in wall thickness and diameter, ends match accurately every time. Its low-carbon steel welds readily, making sound, leak-proof joints.

These are just four of this *modern* line pipe's outstanding qualities. All ten, listed at left, are the reasons why more than 55,000 miles of Republic Electric Weld Line Pipe have been placed in service during the past twenty-one years. They're your assurance of good construction time and complete dependability for lines carrying natural gas, gasoline, crudes and by-products.

Write for descriptive literature.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Dept.: Chrysler Bldg., New York 17, N.Y.

REPUBLIC STEEL

Republic
ELECTRIC WELD LINE PIPE

Other Republic Products include Casing and Tubing—Carbon, Alloy and Stainless Steels—Studs, Bolts and Nuts—Heat Exchanger Tubes

XUM

1,892 ft., Heebner 3,015 ft., Lansing-Kansas City 3,115 ft., Arbuckle 3,374 ft.

Mallard 1 Lamatsch, NW NW NW 18-17s-11w, dry, TD 3,344 ft., elev. 1,847 ft., Lansing-Kansas City 3,042 ft., Arbuckle 3,314 ft.

Adair 1 Opie, NE NE SE 12-18s-15w, dry, TD 3,620 ft., elev. 1,964 ft., basal Kansas City 3,515 ft., Sooy 3,554 ft., Arbuckle 3,570 ft.

Graham County: Heathman 1 Blazier, NW NW NE 34-9s-21w, dry, TD 3,957 ft., elev. 2,319 ft., Lansing-Kansas City 3,567 ft., Sooy 3,843 ft., Arbuckle 3,944 ft.

McPherson County: Texas Pacific 1 Koehn, SW SW NE 33-19s-2w, dry, TD 3,520 ft., elev. 1,543 ft., Simpson 3,490 (?) ft.

Pawnee County: Vickers 1 Hawes, NW NW SW 29-23s-16w, dry, TD 4,438 ft., elev. 2,068 ft., Heebner 3,607 ft., Lansing-Kansas City 3,739 ft., Sooy 4,146 ft., Viola 4,185 ft., Simpson 4,324 ft., Arbuckle 4,393 ft.

Phillips County: B & R 1 Babcock, CNL NE NE 27-1s-18w, dry, TD 3,800 ft., elev. 2,170 ft., no tops reported.

Stafford County: Nadel & Gussman 1 Fanshier "A," SW SW NE 26-21s-13w, dry, TD 3,740 ft., anhydrite 715 ft., Lansing-Kansas City 3,334 ft., Sooy 3,571 ft.

Armer 1 Mackley, NW NW NE 36-24s-14w, dry, TD 4,260 ft., elev. 1,945 ft., Sooy 3,943 ft., Viola 4,027 ft., Simpson 4,163 ft., Simpson sand 4,179 ft., Arbuckle dolomite 4,209 ft.

Sumner County: Laura Jane 1 Wagner, NE NE NW 12-30s-1e, dry, TD 3,625 ft., elev. 1,223 ft., Kinderhook 3,529 ft., Simpson 3,605 ft.

EASTERN NEBRASKA WILDCAT FAILURES

Richardson County: Peters et al., 1 Kauk, NW NW NW 17-1n-18w, dry, TD 3,595 ft., perf. w/36 shots at 3,548-68 ft., no shows, 500 gal. of acid, bled 3 bbl. of water per hour, very slight show of oil, PB 3,448 ft., perf. w/36 shots at 3,430-40 ft., very slight show of oil, bled 8 gal. of water per hour, declined to 5 gal. per hour, 500 gal. of acid, swabbed 1 bbl. of water per hour, show of oil.

Seward County: Nebraska Drillers et al., 1 Markle, SE SE NE 23-9n-4e, dry, TD 2,277 (?) ft., Arbuckle est. 2,210 ft.

Ohio Fields

Holmes County Well Swabs Out 82 Bbl.

COLUMBUS.—The Preston Oil Co. 3 T. L. Bucklew, Section 15, Killbuck Township, Holmes County, an offset locaton to the south, drilled through the Clinton to a total depth of 3,532 ft. with a good oil showing, natural. After shooting, 82 bbl. was swabbed out in 24 hours.

The National Gas Co. has started drilling again in their Newburg sand pool west of West Salem. The 8 Bertha Berry, Section 23, Walnut Township, Fairfield County, topped the sand at 1,948 ft. and was drilled to 1,955 ft. where the well made 13 bbl. of oil and 120,000 cu. ft. of gas, natural. After a 30-qt. shot, the production increased to 150 bbl. and 300,000 cu. ft. the first day.

William Hoey et al., 1 R. D. Fleming, Lot 17, Chatham Township, Medina County, topped the Newburg at 2,640 ft. and finished at 2,666 ft. still in sand, with 600,000 cu. ft. of gas, natural. The well will be tubed and then acidized.

Leonard Hines et al., found a good shallow sand well on 4 J. F. Clift, Section 34, Bethel Township, Monroe County. The pay zone was found at 1,250 ft., drilled 2 ft. in and gaged 850,000 cu. ft. of gas, natural.

R. W. Porter 1 Rosa Carr, Section 30, Orange Township, Meigs County, logged the Berea sand at 1,634-48 ft. with 7 bbl. of oil, natural, and 20 bbl. in 24 hours after a 40-shot.

OHIO WILDCAT FAILURE

Pike County, Beaver Township: White Drilling Co. 1 Raymond Babst, Sec. 35, dry, TD 4,227 ft.

Illinois-Ind.-Ky.

130-Bbl. Well Extends Tunnel Hill Production

PRODUCTION of the Tunnel Hill pool, Henderson County, western Kentucky, has been extended to the northeast with the completion by Delta Drilling Co. and associates of their 1 Overfield, SE SE SW 23-O-23. The well pumped 130 bbl. of oil with about 10 bbl. of water per day from Waltersburg sand at 1,768-80 ft.

Two miles to the southwest on the opposite side of the Tunnel Hill pool and about a mile northwest of production in the Poole area, same county, Fred Meyer, Jr., recovered 90 ft. of clean oil with an additional 300 ft. of oil-cut mud in a drill-stem test of Tar Springs sand at 1,864-73 ft., in his 1 Edgar Allen, 6-N-23. Casing has been run to the top of the sand preparatory to production tests. The drill-stem test gave no indication of water.

This county has another new producing area with the completion by R. E. Hupp and associates of their 1 Crafton-Baskett Heirs, NE NE 4-P-25. This well, located 5 miles east of Henderson and 2 miles southwest of the Spottsville pool, nearest production, flowed 190 bbl. per day. Pro-

Are you losing money because paraffin slows up your production? Then Swan-O-Tret is the answer to your problem.

Swan-O-Tret down-the-hole treatment dissolves paraffin and keeps it in permanent suspension *from the well to the refinery.*

Injections of Swan-O-Tret will clean the formation, well bore, pump, rods, tubing, lead lines and tank bottom of paraffin solids *at less cost than any other method.*

Swan-O-Tret is safe to handle and is harmless to equipment, skin and clothing.

Without any obligation, let your nearest Swan-O-Tret Service Engineer show you how you can decrease your lifting costs with Swan-O-Tret, the proved oil well conditioner.

WELL FORMATION CONDITIONER

PARAFFIN SOLVENT

AID TO ACIDIZING

REVIVES OLD WELLS

SWAN-O-TRET WELL CONDITIONER SERVICE IS AVAILABLE FROM:

Superior Paraffin Scraping Co.
Phone 2512 . . . Odessa, Texas
West Texas, Panhandle and New Mexico

Harry L. Ford
Phone 720 . . . Mt. Vernon, Ill.
Illinois District

O. B. Mullins Oil Well Service
Aldridge Hotel . . . Wewoka, Okla.

Dow-Card Oil Field Specialties Co.
Ph. 3382, Casper, Wyo. — 3301, Lovell, Wyo.
Rocky Mountain District

H. & J. Steam Cleaning Co.
Phone 488 . . . Winfield, Kansas

A Few Attractive Territories Are Open
Write for Information

Swan-O-Tret is also available through your nearest supply store

Swan Oil Well Treating Co.
Central Bldg., Wichita, Kansas

Gentlemen: Without obligation, send us folder and data on Swan-O-Tret.

Name_____

Firm_____

Address_____

City_____ State_____

XUM

duction is from McClosky lime at 2,225-36 ft. The discovery has been designated as the Zion North pool.

A westward extension and a new pay zone for the Union-Bowman area, Gibson County, Indiana, are indicated by results of a drill-stem test in J. C. Haynes and associates 2 E. Thompson SE NE SW 2-1s-10w, in Militia Donation 101. The new zone is the Aux Vases sand found at 1,721-30 ft. In the test, lasting 75 minutes, gas showed within 4 minutes and in the break-down 375 ft. of clean oil was recovered. Casing has been run to 1,710 ft. with bottom of the hole carried to 1,736 ft. Location of the well is west of the southern part of the pool, 6 miles northeast of Patoka.

Two miles southwest of Francisco, same county, George & Wrather have established a new producing area ¾-mile west of the Barrett-Mitchell pool where their 1 E. Weber, NE NE NW 36-2s-10w, pumped at the rate of 95 bbl. of oil daily following acidization, using 1,000 gal.

The Brownsville pool, southwest of Carmi, White County, Illinois, is being extended ¾ mile to the east where Skiles Oil Corp. 1 Finch, NE NW SE 32-5s-9e, produced at the rate of 6 bbl. of oil per hour in swabbing tests. The well is being put on the pump for completion. Production is from Cypress sand at 2,806-22 ft.

ILLINOIS SUCCESSFUL WILDCATS

Clinton County: T. R. Kerwin 1 Bass, NW SE NW 1-3n-3w, IP 14 bbl., Benoist 1,147-52 ft., TD 1,153 ft.

Franklin County: W. Duncan 1 U. S. Coal & Coke, NE NW NE 4-6s-3e, IP 41 bbl., Cypress 2,573-93 ft., TD 2,953 ft.

White County: Sohio Petroleum Co. 1 Williams, SE SE SW 34-3s-9e, IP 117 bbl., Aux Vases 3,324-34 ft., TD 3,342 ft.

ILLINOIS WILDCAT FAILURES

Christian County: M. A. Eisinstein 1 Cheney, NW NW NW 11-11n-4w, dry, TD 2,068 ft.

Clay County: J. L. Black 1 Danks, NE NW SE 18-5n-6s, dry, TD 2,480 ft.

J. L. Black 2 Danks, NE NW NW 17-5n-6e, dry, TD 2,571 ft.

J. L. Black 3 Danks, NW NW NE 19-5n-6e, dry, TD 2,510 ft.

DeWitt County: Paul Doran et al., 1 Arbogant, NW NE SE 10-20n-4e, dry, TD 1,430 ft.

Effingham County: Dal Hopkins 1 Beccue, NW SW SW 6-6n-5e, dry, TD 2,462 ft.

Franklin County: Carter Oil Co. 1 Trustee Tract 21, SW NW NW 2-7s-4e, dry, TD 3,284 ft.

Skiles Oil Copr. 1 Hatchcraft, NE SW NW 24-5s-4e, dry, TD 3,304 ft.

Jasper County: Nation Oil Co. 1 Brackett, NW SE NE 5-5n-9e, dry, TD 3,218 ft.

Lawrence County: Illinois Mid-Continent Co. 1 Coen, NE SW SW 27-3n-11w, dry, TD 2,012 ft.

Mason County: J. L. Pinkston 1 Kramer, SE SE NW 9-19n-10w, dry, TD 668 ft.

J. L. Pinkston 1 Ainsworth, SE SE NE 15-19n-10w, dry, TD 1,684 ft.

Montgomery County: O. A. Reid 2 Hitchins, NW SW SW 16-10n-4w, dry, TD 2,002 ft.

St. Claire County: W. R. Baun 1 Dabb, N½ SE SW 27-1s-8w, dry, TD 325 ft.

Shelby County: A. Valters et al., 1 Whittington, SW NW NE 9-9n-2e, dry, TD 3,280 ft.

White County: Arrow Drilling Co. 1 Wright, NE SE SW 15-5s-10e, dry, TD 3,170 ft.

Aurora Gasoline Co. 1 Garrison, NW NW SE 1-7s-10e, dry, TD 3,036 ft.

INDIANA SUCCESSFUL WILDCAT

Pike County: R. D. Brown, Inc., 1 Frederick-Selby, SE NE NW NW 28-1n-9w, IP 15 bbl., O'Hara 2,222-23 ft., TD 2,223 ft.

INDIANA WILDCAT FAILURES

Clay County: G. H. Froderman 1 Harr, NE NE NE 27-11n-7w, dry, TD 1,564 ft.

Daviess County: S. R. Nigh 1 Taylor, SW SW NW 3-2n-6w, dry, TD 1,405 ft.

O. Weston 1 Halstine, SE NE SW 18-4n-6w, dry, TD 1,329 ft.

Gibson County: Superior Oil Co. 1 Blood, SW SW NW 24-3s-13w, dry, TD 2,866 ft.

R. T. McDermott 1 Stormont, NW SE NE 34-1s-11w, dry, TD 870 ft.

WESTERN KENTUCKY SUCCESSFUL WILDCATS

Henderson County: Delto Drilling Co. 1 Overfield, NW SW SW SE 23-O-23, IP 130 bbl., Waltersburg 1,769-80 ft., TD 1,786 ft. (Extension Tunnel Hill pool.)

R. E. Hupp et al., 1 Baskett-Croften, NE SE NE NE 4-P-25, IP 190 bbl., McClosky 2,225-36 ft., TD 2,236 ft. (Opens Zion North pool.)

WESTERN KENTUCKY WILDCAT FAILURES

Henderson County: V. R. Gallagher 1 Davis, S½ SE NW 13-P-25, dry, TD 2,398 ft.

Ohio County: L. E. Owen 1 Brickett, NE NE NE NE 6-O-33, dry, TD 1,015 ft.

Union County: F. L. Strickland 1 Flannery, SW SW NW NW 5-M-17, dry, TD 1,913 ft.

EASTERN KENTUCKY

ASHLAND.—In northeastern Estill County and on the east end of the Furnace (deep) gas pool 25-P-69, Jack Kindred and associates are deepening 2 George Lyle. After testing for some weeks, operators decided to deepen after disappointing results on the pump. Tested interval was from 2,690 to 2,705 ft. total depth in St. Peter sand topped at 2,630 ft. Tests yielded about 2 bbl. of oil daily which was not increased after shooting. Depth is now 2,710 ft. with no increase in fluid noted.

In Morgan County 17-P-75 Van Everman and associates are attempting to extend production in old Cannell City pool to the southwest at 1 J. B. Hollon. Operators are currently drilling at 1,575 ft. and expecting to reach objective Corniferous lime in few days.

In Floyd County and in Big Sandy gas

PEERLESS Hi-Surface Horizontal SEPARATORS
Are...NEW...DIFFERENT!

By utilizing New Principles of Separation, they are achieving Unequalled Performance for High Pressure and Extreme Foaming Conditions.

PEERLESS are SPECIALISTS in the SEPARATION of LIQUIDS and GASES

THEY FEATURE:

1. NEW . . . DIFFERENT *Extremely High Scrubbing Surface*
2. NEW . . . DIFFERENT *Means of Coalescence*
3. NEW . . . DIFFERENT *Simple Sensitive Torque Tube Leveltrol with no bleed pilot*

PEERLESS MFG. CO. DALLAS, TEXAS

WRITE TODAY FOR FULL INFORMATION ABOUT PEERLESS SEPARATORS AND NEW BULLETINS.

PEERLESS MANUFACTURING CO.
Walnut Hill Lane at Old Denton Road
P. O. Box 7193 DALLAS, TEXAS Dixon 4-8431
AGENTS IN: Houston, Odessa, Wichita Falls, and El Paso, Texas; Tulsa, Denver, Phoenix, Los Angeles, Boston, Philadelphia, Cleveland, New York City, Buffalo, Chicago, Richmond

field, Otis Cooley and associates have completed 1 Webb & Hereford for 130,000 cu. ft. of gas daily from Devonian shale and Keener (Mississippian) sand at total depth 1,981 ft. The test located at mouth of May Branch of Big Sandy River and near the town of Prestonsburg is now tubed and gas will be sold to that town.

EASTERN KENTUCKY SUCCESSFUL WILDCAT

Breathitt County: United Carbon Co. 4 E. J. Evans fee, 1-M-77, pumped 50 bbl. of oil per day from Mississippian lime. TD 1,377 ft., Pencil Cave 1,140 ft., Big Lime 1,165 ft., Big Injun 1,300 ft.

Permian Basin

Lynn County Wildcat Reports Reef Top High

MIDLAND.—Lynn County was again holding attention as James H. Snowden and others 1 Bryan Williams, NE SE 1,407-1-ELRR Survey, tight wildcat near the east county line, about half way up from the south line, reported the reef top high, as correlated to other wells in the county.

According to reports, the 1 Bryan Williams topped the reef at 8,521 ft., minus 5,567 ft., which was said to be 135 ft. high to Phillips Petroleum Co. 1 Bartley, dry hole 3 miles to the southwest, and 128 ft. higher than Magnolia Petroleum Co. 1 Garza Land & Cattle Co., reef discovery near the southeast corner of the county. A core from 8,531-46 ft. recovered 10 ft. of fossiliferous crystalline lime; and from 8,546-71 ft. recovery was 25 ft. of lime having pin-point porosity from 8,548-53 ft., bleeding salt water, and the balance dense lime. Operators were to core ahead.

Magnolia's offset at its discovery, the 1 W. W. Caswell, NE SW 431-9-ELRR Survey, was rigging up rotary at last report. Location is 1,320 ft. west of the discovery. Houston Oil Co. 1 H. B. Howell, 467 ft. out of the northeast corner of 451-1-ELRR, 6 miles northwest of the Magnolia well, was a location.

M. F. C. Corp., new organization of Levelland, made location for an 8,700-ft. wildcat in southeastern Lynn County, on a Tide Water Associated Oil Co. farmout. The well is to be the 1 Garza Land & Cattle Co., SE SE 10-10-ELRR, 14 miles east of O'Donnell and about 3½ miles south and a little east of Magnolia 1 Garza Land.

In Scurry County, 3 miles north of Snyder, L. H. Armer and G. H. Chizum 1 C. M. Lyons, NW NW 119-3-H&GN, completed from the "C" zone of the Strawn, and operators were requesting discovery allowable on the basis that production is coming from a separate reservoir from that found in the North Snyder Strawn area, 2½ miles to the north. On 24-hour completion potential, the well flowed 388 bbl. of oil, plus some formation water, through 24/64-in. choke from bottom of casing at 7,456 ft. and total depth of 7,504 ft. Gravity of the oil was 37.5°, and flowing pressure was 400 psi. on tubing. Location is about 1 mile east of reef production.

Herman Brown 1 Parks, 552-97-H&TC, ½-mile south outpost to the one-well Collins Strawn field of Scurry County, and 1 mile east of reef production in the Kelley-Snyder area, was testing and trying to make a steady flow from casing perforations at 7,292-7,311 ft. After swabbing three trips, the well started flowing at the rate of 60 bbl. of oil an hour, and died. Later it started after being swabbed twice, and the first hour gaged 100 bbl. of oil.

Ohio Oil Co. 1-A F. W. Murkett, SE NE 13-3-H&GN, 8,000-ft. wildcat, 1 mile east of China Grove on the Mitchell - Scurry county line, topped a limestone at 7,400 ft., minus 5,032 ft., which operators thought had some possibility of being the reef. However, there were no shows in drilling to 7,454 ft., and a drill-stem test from 7,378-7,444 ft., open 1 hour, recovered 50 ft. of drilling mud with no shows.

In northwest Mitchell County, J. W. Murchison 1 J. C. Womack, SE NW 8-26-H&TC, 3 miles south of the Dunn field, put 64 shots in casing from 7,720-36 ft., and was testing. The well was drilled to 8,126 ft., then plugged back to 7,800 ft. to test a reef lime topped at 7,693 ft. On a test from 7,685-7,800 ft. the well was showing for around 5,000,000 cu. ft. of gas a day, and flowing an estimated 5 to 10 bbl. of oil an hour.

WEST TEXAS (DISTRICTS 8 AND 7-C) SUCCESSFUL WILDCAT

Runnels County: Vincent & Welch, Inc. 1 P. M. Davis, Sec. 329, H&TC Sur., 2 mi. NE of S. Winters field, 2 mi. SE Winters, TD 3,610 ft., elev. 1,852 ft., Palo Pinto pay 3,600 ft., flowed 219 bbl. of 43.7°-gravity oil a day, natural, 20/64-in. choke, GOR 400 cu. ft., TP 95 psi., CP 550 psi.

WEST TEXAS (DISTRICTS 8 AND 7-C) WILDCAT FAILURES

Coke County: Carl E. Maxey et al 1 Charles Copeland, NW SW 273-1-A-H&TC, 2½ mi. W Ft. Chadbourne field, dry, TD 6,052 ft., reef 3,298 ft., Odom lime 5,989 ft.

Crockett County: Oliver & Kotyza 1-A A. C. Hoover, 13-1-GC&SF, 13½ mi. NE Sheffield, dry, TD 2,213 ft.

Stanfield & Cousins 1 University, Sec. 27-45-University Lands, 15 mi. NW Ozona, ¾ mi. E Midway Lane field, dry, TD 2,063 ft.

Gaines County: Samedan Oil Co. 1 J. S. George, 25-A22-PSL, 1 mi. S Harris field, dry, TD 3,500 ft., elev. 3,267 ft., Yates 3,040 ft.

The answer to your coring problem

D&S "KNOW-HOW"

Truco DIAMOND BITS

D&S CORE BARRELS

Drilling & Service, Inc.

3031 Elm Street, Dallas 1, Texas
Riverside 6811 • Tremont 7-5559

Other Offices-Services: Odessa, Texas — 6774; Casper, Wyo. — 3739; Hobbs, N. M. — 1015R; Lindsay, Okla. — 255; Norman, Okla. — 4360; Shreveport, La. —7-8627; Snyder, Texas — 276J

Distributors: Ralph Ruse, 15301 South Avalon Blvd., Compton, Calif. Telephone: (Los Angeles) MEnlo 45547; Allied Services, Inc., Mt. Pleasant, Michigan Telephone: 29-861

Foreign: D. T. O'Connor, 500 Fifth Avenue, New York, N. Y.; Petroleum Industry Consultants, C. A., Caracas, Venez.; Denton-Spencer Co., Ltd., Calgary, Alberta, Canada.

THE OIL AND GAS JOURNAL

"He says th' difference between th' 75-cent one an' th' dollar one is two bits!"

XUM

Runnels County: E. C. Johnston and G. W. Strake 1 L. A. David, J. P. Harrell Sur. 1, 4½ mi. E Wingate, dry, TD 5,425 ft., PB 4,320 ft., elev. 1,996 ft., Palo Pinto 3,980 ft., Capps 4,273 ft., Caddo 4,950 ft., swabbed 12 bbl. oil and 124 bbl. water in 12 hr. from 4,277-92 ft.

W. G. Ray and W. C. Woolf 1 J. P. Brevard, Sec. 322, J. M. Rhodes Sur., 4 mi. SE Crews, dry, TD 4,039 ft., elev. 2,016 ft., Palo Pinto 3,180 ft.

Scurry County: Standard-Fryer Drilling Co. 1 L. L. Russell, SE NE 191-3-H&GN, 10 mi. S Snyder, dry, TD 7,008 ft., elev. 2,273 ft., San Andres 1,499 ft., Glorietta 2,320 ft., Wolfcamp 4,311 ft., Pennsylvania 4,720 ft.

Sterling County: George W. Strake 1 Lelah Davis Bird (was W. A. Davis est.), NE NE 58-2-H&TC, 11 mi. N Sterling City, dry, TD 8,427 ft., elev. 2,630 ft., Cisco 4,860 ft., Canyon 6,870 ft., Ellenburger 8,378 ft.

Tom Green County: Odstricil & Kountz Bros. 1 Clark, 83-5-H&TC, 14½ mi. SE Clark field, dry, TD 2,000 ft.

Sutton County: H. L. Hunt 1 Jack Allison, SE SE 87-9-TW&NG, 17 mi. E Sonora, 9 mi. S Roberts gas well, dry, TD 5,501 ft., elev. 2,374 ft., Palo Pinto 4,537 ft., Strawn 4,840 ft., Bend 5,317 ft.

TEXAS PANHANDLE (DISTRICT 10) WILDCAT FAILURE

Ochiltree County: The Texas Co. 1 McGarrough, NW NW 151-13-T&NO, 8½ mi. E of SW corner of county, dry, TD 10,190 ft., PB 7,015 ft., elev. 3,068 ft., brown dolomite 3,460 ft., Douglas 5,588 ft., Mississippian 8,867 ft., St. Genevieve 9,080 ft., St. Louis 9,330 ft., Spergen 9,520 ft.

SOUTHEAST NEW MEXICO WILDCAT FAILURES

Chaves County: Dekalb Agricultural Association 2 Compton-State, NE SE 15-11s-27e, dry, TD 1,993 ft., elev. 3,730 ft., Queen 905 ft., San Andres 1,345 ft.

Lea County: Allen Hargraves 1 Federal-Mascho, NW SW 24-22s-33e, dry, TD 4,4497 ft., elev. 3,489 ft., anhydrite 1,464 ft., base salt 3,606 ft.

National Lead Advances Baroid Sales Employes

National Lead Co. has announced the advancement of three Baroid Sales Division employes. Reginald Rowand has been appointed manager of Baroid's production department. He came to Baroid in 1945 as superintendent of construction and maintenance. In 1946 he became superintendent of bentonite plants and properties with headquarters at Belle Fourche, S. D., and was appointed superintendent of Baroid's Magnet Cove, Ark., barytes mines and plant in 1949.

Earl H. Murchison, former superintendent of the El Portal, Calif., barytes mines and plant, replaces Rowand as superintendent of the Magnet Cove barytes operation. Murchison became connected with the Cartersville, Ga., plant in 1919 before it was a part of Baroid. In 1924 he was made superintendent of the Fountain Farm, Mo., plant and in 1928 went to El Portal as superintendent.

Robert B. Spitzer, general superintendent of the Rossi-Merced mines and plant, takes on the additional duties of superintendent of the El Portal mines and plant.

Pipe-Line Construction

(Continued from page 103)

Herndon, Va.; which will work west from Potomac River.

Schedule 15—24 miles of 30-in., northern end running to Hudson River, under construction; Oklahoma Contracting Corp.; M. E. Shiflett, spreadman; office, Edgewater, N. J.; Omaha Dredge & Dock Co., preparing laying of 30-in. across Hudson River in May.

85 miles, 4 to 14-in., gathering system, South Louisiana; J. B. Latham, superintendent; headquarters, Vinton, La.; Latex Construction Co., contractor.

50 miles, 18-20-in., gathering line, South Louisiana; O. R. Burden Construction Co., contractor.

Trunkline Gas Supply Co.—1,775 miles, 10-26-in., planned; includes 740-mile, 26-in. main line from Lake Charles, La., to Tuscola compressor station on Panhandle Eastern Pipe Line Co., (approved), and 1,035 miles, 10-24-in., Lake Charles, La., to McAllen, Tex., field lines, pending FPC approval of changed plans.

United Fuel Gas Co.—32 miles, 20-in., authorized; Roane, Calhoun, and Wetzel counties, West Virginia.

United Gas Pipe Line Co.—90 miles, 16-in., planned, West Bay field to New Orleans.

105.6 miles, 20-in., authorized, loop line paralleling Carthage, Tex.-Sterlington, La., and extending on to near Monroe, La.

26 miles in Louisiana conecting with East Texas system, planned.

United Natural Gas Co.—29 miles, 12-in., authorized, laterals, Elk County, Pennsylvania.

Virginia Natural Gas Co.—153 miles, planned, Buckingham to Richmond and Portsmouth, Va.

LEGAL

Department of the Interior, Wind River Indian Agency, Fort Washakie, Wyoming. Notice is hereby given that **SEALED BIDS** will be received until 2:00 P. M., **Monday, July 24, 1950,** at the Wind River Agency, Fort Washakie, Wyoming, for the leasing of the following parcels of Tribal lands, located in Fremont County, Wyoming, for oil and gas mining purposes: **TOWNSHIP 2 NORTH, RANGE 1 WEST, W.R.M.** UNIT NO. 1. S½ N½, SE¼, Lots 1, 2, 3, and 4, Section 4, S½ NW¼, Lots 3 and 4, Section 3, containing a total of 636.74 acres. One lease will be drawn on the applicable Government form for the above described unit. The right is reserved to reject any and all bids. The successful bidder or bidders will be required to pay the cost of advertising. The lease will be sold to the highest responsible bidder for a cash bonus upon an acreage basis in addition to the royalty of 12½%. The successful bidder or bidders must enclose with their bids a certified check or bank draft drawn upon a solvent bank in an amount equivalent to at least 20% of the bonus bid plus 20% of the first year's rental at the rate of $1.25 per acre per annum, as a guaranty of good faith. The checks are to be made payable to the TREASURER OF THE UNITED STATES. The lease must be completed and filed with this Office within 20 days from the date they are received by the successful bidder for execution and accompanied by payment of the remainder of the bonus bid, the balance of the first year's rental, a filing fee, and cost of the printed lease forms. Failure in any of these conditions may subject the bid to cancellation without further notice and forfeiture of payments already made. The adequacy of the bonus offers will be determined by the U. S. Geological Survey. The successful bidder will be required to commence a well within one year from the date of approval of the lease by the Commissioner of Indian Affairs, and diligently continue the drilling of said well to a depth sufficient to test the Tensleep sand, or 6500', unless oil or gas in commercial quantities is found at a lesser depth or the geological survey shall determine that further drilling in the well would not be warranted. The lease to be issued for the described unit of tribal land will be made for a term of 10 years from date of approval by the Commissioner of Indian Affairs and as long thereafter as oil and/or gas is produced in paying quantities, in accordance with the provisions of the Act of May 11, 1938, (52 Stat. 347) and the regulations approved May 31, 1938, Title 25, Code of Federal Regulations, Part 186, as amended. The rate of royalty will be 12½% of the value of all oil, gas, and/or natural gasoline unless the lessor, with the approval of the Commissioner of Indian Affairs, elects to take royalty in kind. A suitable bond will be required, and such bond must be approved by the Department. The responsibility of complying with any requirements of the Federal Documentary Stamp Statutes will be left with the successful lessees. The bids should be addressed to the Superintendent, Wind River Agency, Fort Washakie, Wyoming, in an envelope plainly marked: BID FOR OIL AND GAS MINING LEASE, TO BE OPENED AT 2:00 P. M. Monday, July 24, 1950. J. M. Cooper, Superintendent.

FOR CLEAN OIL and CLEAN ENGINES . . .
HILCO
OIL PURIFICATION EQUIPMENT
HYFLOW OIL FILTER
OIL RECLAIMER
PURIFIERS · FILTERS · RECLAIMERS · CONDITIONERS
There's a HILCO for every engine lubrication and fuel oil Purifying Problem
Before You Buy or Specify - write for FREE literature
THE HILLIARD CORPORATION, 23 W. 4th St, Elmira, N. Y.
In Canada: UPTON-BRADEEN-JAMES, Limited, 990 Bay St., Toronto; 3464 Park Ave., Montreal

May Completions Set Record for Year; Over 12 Million Feet Drilled

by Philip C. Ingalls

THERE were more new wells finished during May than in any other month so far this year. The number of completions totaled 3,501, a gain of 84 wells over March's previous peak for 1950. The 12,528,782 ft. drilled was just short of the year's record (also established in March) of 12,952,782 ft. Wells actually drilling or rigged up was not only a new high for this year, but also the greatest since December, 1948.

May vs. April 1950

Figures for both completions and footage drilled during May were higher than for April in all districts except two, Texas-New Mexico and Rocky Mountain.

The North Central district (Ohio, Indiana, Kentucky, Illinois, and Michigan) led all others, gaining 240 completions and 423,415 ft. These gains represent percentage increases of 53 per cent in wells and 44.8 per cent in footage. The Eastern area, New York, Pennsylvania, and West Virginia, reversed its steady decline in activity and was up 24.3 per cent in completions and 25 per cent in footage over the previous month.

The Mid-Continent section, composed of Kansas, Nebraska, and Oklahoma gained 18.4 per cent in wells and 14.1 per cent in footage. In the Southern states of Alabama, Arkansas, Florida, Georgia, Louisiana, and Mississippi, where the depths of wells continued to increase, gains of 6.4 per cent and 10.3 per cent were recorded for number of completions and footage, respectively. Wells were also deeper in the Pacific Coast where only one more well was completed but an increase of 12.1 per cent in footage was reported.

Both the number of wells and footage declined approximately 1.9 per cent in the Texas-New Mexico district. In the Rocky Mountain region, including Colorado, Idaho, Montana, Utah, and Wyoming, completions were down 6 per cent and footage fell 9.3 per cent.

May 1950 vs. May 1949

During May 1950 there were 352 more wells completed than in May 1949. Footage increased 1,326,475 ft. over the same month of the preceding year. Percentagewise, the gains in both categories approximates 11.5 per cent, indicating that drilling depths for the two periods are essentially the same.

Cumulative Comparisons

During the first 5 months of 1950 there were 6.3 per cent more wells completed than during a like period in 1949. Footage drilled to the end of May 1950 was up 8.9 per cent. In the Mid-Continent district completions increased 26.2 per cent and there was 22.9 per cent more hole drilled. In the southern states completions were 18.9 per cent higher and footage totals were 20 per cent greater. The Texas-New Mexico area had increases of 17.2 and 15.6 per cent for completions and footage, respectively.

SUMMARY OF COMPLETIONS—MAY 1950

	Total comp.	Oil	Gas	Dry	Under 2,500 ft.	2,500-5,000 ft.	5,000-7,500 ft.	7,500-10,000 ft.	10,000-12,500 ft.	Over 12,500 ft.	Total footage	Rigs and drilling
New York	47	24	0	23	47	0	0	0	0	0	67,373	‡49
Pennsylvania	127	64	14	49	114	11	0	2	0	0	222,491	218
West Virginia	61	13	35	13	12	22	22	5	0	0	152,921	¶153
Ohio	84	34	25	25	44	40	0	0	0	0	178,720	109
Kentucky	94	44	14	36	72	21	1	0	0	0	174,252	85
Illinois	240	116	2	122	130	110	0	0	0	0	518,303	302
Michigan	90	44	1	45	53	37	0	0	0	0	185,588	156
Kansas	343	166	36	141	28	312	3	0	0	0	1,080,294	382
Neb., Mo., Iowa	11	4	2	5	2	9	0	0	0	0	21,856	24
Oklahoma	488	287	34	167	154	238	78	9	9	0	1,679,763	783
Texas	1,222	789	56	377	346	446	311	104	15	0	5,200,844	1,562
North	226	124	1	101	118	80	28	0	0	0	649,081	147
West Central	139	65	4	70	55	78	5	1	0	0	430,461	168
West	352	292	3	57	68	85	168	25	6	0	1,807,796	682
Panhandle	63	37	20	6	5	58	0	0	0	0	189,195	91
East	85	64	2	19	23	42	12	8	0	0	334,803	95
Gulf Coast	182	110	11	61	28	52	54	42	6	0	992,236	205
Southwest	175	97	15	63	49	51	44	28	3	0	807,282	174
Louisiana	205	135	22	48	60	25	35	32	47	6	1,299,093	223
Northern	100	59	18	23	58	16	13	8	5	0	368,173	77
Southern	105	76	4	25	2	9	22	24	42	6	930,920	146
Arkansas	32	19	0	13	9	18	1	4	0	0	112,447	40
Mississippi	25	11	1	13	0	0	14	8	3	0	178,913	24
Ala., Ga., Fla.	5	1	0	4	0	4	1	0	0	0	20,894	4
Montana	19	11	4	4	15	4	0	0	0	0	38,280	76
Wyoming	38	27	1	10	1	28	5	3	1	0	181,017	‖121
Colorado	6	0	1	5	2	1	3	0	0	0	24,965	23
Utah	0	0	0	0	0	0	0	0	0	0	0	22
New Mexico	46	31	7	8	14	13	6	9	3	1	228,876	**135
California	134	95	2	37	28	51	32	15	6	2	649,533	197
Indiana	184	68	2	114	153	31	0	0	0	0	312,350	186
Total May 1950	3,501	†1,983	259	*1,259	1,284	1,421	512	191	84	9	12,498,782	‡4,874
Total April 1950	3,095	1,826	167	1,102	1,128	1,196	540	148	70	13	11,577,543	4,871
Total May 1949	3,198	1,805	238	1,155	1,152	1,413	378	162	80	13	11,389,613	4,685
Cumulative 1950	16,030	9,295	1,057	5,678	5,712	6,427	2,597	856	382	56	59,693,877	....
Cumulative 1949	15,082	8,592	1,072	5,418	5,469	6,297	1,991	886	385	54	54,809,739	....

*Incl. 94 service wells: N. Y. 23, Pa. 45, Ohio 2, Mich. 6, Kans. 5, Okla. 12, W. Tex. 1. †Incl. 42 distillate wells: Okla. 3, E. Tex. 2, Tex. Gulf 5, S.W. Tex. 6, No. La. 11, So. La. 9, Miss. 6. ‡Incl. all wells rigged up and/or drilling at end of month. §Incl. 2 Md. ¶Incl. 2 Va. ‖Incl. 3 Dakotas and 3 Idaho. **Incl. 5 Ariz.

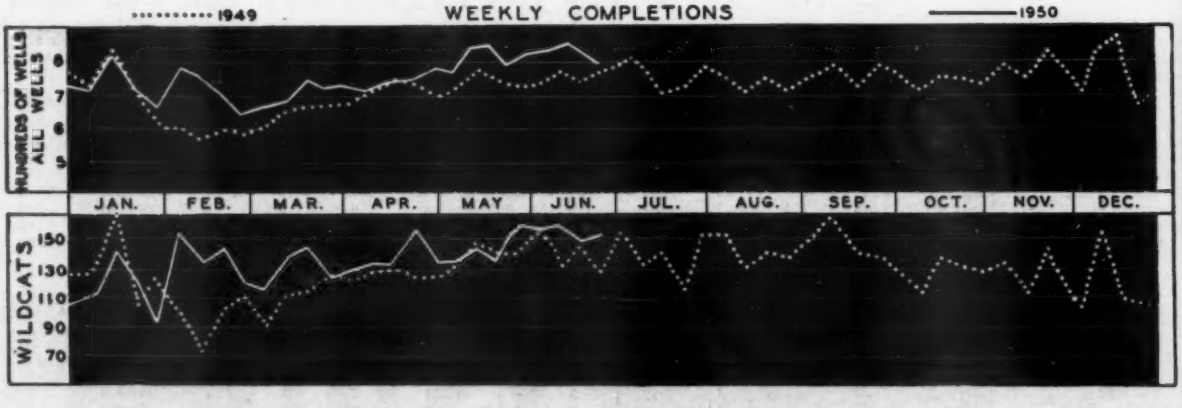
CURRENT STATISTICS

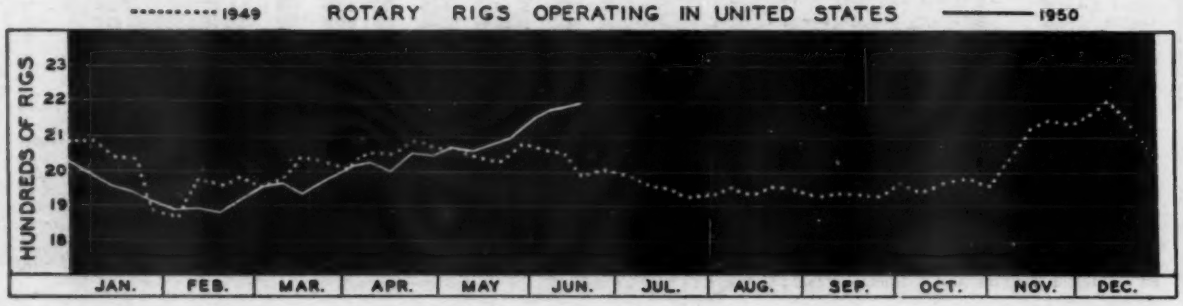
EXPLORATION

WEEKLY WELL COMPLETIONS . . . WEEK ENDED JUNE 24, 1950

	Total of all wells					June 24		Wildcat completions and discoveries										
													Cumulative total, 1950					
	Comp.	Oil	Gas	Dry	Footage	1950	1949	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	8	4	0	*4	9,796	203	587	0	0	0	0	0	0	0	0	0	0
Pennsylvania	15	4	7	*4	35,386	464	923	0	0	0	0	0	0	0	0	2	2
West Virginia	7	3	4	0	21,371	305	235	0	0	0	0	0	0	0	10	12	22
Ohio	18	5	6	†7	33,240	456	529	0	0	0	1	1	1	0	1	7	9
Indiana	33	11	0	†22	55,202	640	591	1	0	0	5	6	16	0	1	119	136
Kentucky	27	15	2	10	45,001	443	420	3	0	0	3	6	10	0	1	35	46
Illinois	73	41	0	32	177,387	1,189	1,139	3	0	0	17	20	27	0	1	263	291
Michigan	16	6	0	‡10	35,540	373	442	0	0	0	3	3	17	0	4	121	142
Kansas	56	30	4	‡22	192,819	1,722	1,470	1	0	1	10	12	43	0	3	276	322
Nebraska	4	1	0	3	15,598	41	15	1	0	0	3	4	1	0	1	19	21
Oklahoma	90	59	2	†29	335,388	2,483	2,007	6	0	0	15	21	77	5	8	316	406
Texas	334	222	13	99	1,403,651	7,451	6,472	10	0	1	52	63	225	16	59	1,184	1,484
North Central (Dist. 7-B & 9)	100	55	2	43	292,889	2,314	2,079	5	0	0	18	23	92	2	17	453	564
West (Dist. 7-C & 8)	87	69	0	18	430,551	2,138	1,531	1	0	0	10	11	48	1	1	232	282
Panhandle (Dist. 10)	22	16	5	1	74,040	449	490	0	0	0	1	1	1	0	2	11	14
Eastern (Dist. 5, 6, & 6-P)	34	26	1	†7	130,894	557	434	0	0	0	4	4	8	3	1	103	115
Gulf Coast (Dist. 2 & 3)	48	32	3	13	275,336	1,045	938	1	0	0	8	9	37	6	21	158	222
Southwest (Dist. 1 & 4)	43	24	2	†17	199,941	948	1,000	3	0	1	11	15	39	4	17	227	287
Louisiana	43	36	2	5	222,520	1,114	988	1	1	0	1	3	27	9	4	85	125
Northern	24	22	1	1	54,829	583	525	0	0	0	0	0	4	1	1	35	41
Southern	19	14	1	4	167,691	531	463	1	1	0	1	3	23	8	3	50	84
Arkansas	10	4	0	‡6	28,690	180	139	0	0	0	3	3	3	0	0	46	49
Mississippi	9	1	1	7	71,203	159	179	0	0	0	3	3	8	2	0	55	65
Southeastern States	2	0	0	2	15,853	30	22	0	0	0	1	1	0	0	1	18	19
Montana	4	1	0	3	10,673	87	102	0	0	0	1	1	1	0	0	12	13
Wyoming	8	6	0	2	39,246	265	279	0	0	0	0	0	8	0	0	30	38
Colorado-Utah	0	0	0	0	0	30	55	0	0	0	0	0	0	0	0	22	22
New Mexico	15	9	1	5	56,235	302	272	0	0	0	2	2	10	1	0	25	36
California	28	22	1	5	92,757	815	1,292	0	0	0	4	4	11	0	2	162	175
Miscellaneous	0	0	0	0	0	8	15	0	0	0	0	0	0	0	0	8	8
Total United States	800	480	43	277	2,897,556	18,760	18,173	26	1	2	124	153	485	33	96	2,817	3,431
Total previous week	851	470	79	302	3,086,845	....	....	18	1	4	125	148	459	32	94	2,693	3,278
Total June 24, 1949	783	470	55	258	2,830,093	....	....	19	3	5	100	127	426	47	87	2,585	3,145

Service wells included: *4, †1, ‡2.





DAILY AVERAGE PRODUCTION FOR WEEK

	June 24 crude oil	B. of M. June demand	June 17 crude oil
Alabama	1,850	1,800	1,750
Arkansas	79,700	87,000	79,450
California	871,500	850,000	872,100
Colorado	59,000	65,000	59,500
Eastern	63,150	62,000	61,950
Florida	1,700	1,200	1,500
Illinois	169,200	186,000	172,300
Indiana	29,800	28,000	29,500
Kansas	286,200	285,000	281,550
Kentucky	26,200	27,000	25,500
Louisiana	563,375	560,000	562,875
North Louisiana	118,650	.....	118,150
South Louisiana	444,725	.....	444,725
Michigan	44,600	46,000	45,800
Mississippi	111,150	103,000	104,750
Montana	22,800	25,000	22,800
Nebraska	2,100	3,000	2,100
New Mexico	126,675	144,000	126,675
Oklahoma	424,550	438,000	421,000
Texas	2,244,450	2,120,000	2,244,450
Dist. 1 (Southwest)	28,275	.....	28,275
Dist. 2 (Southwest)	132,700	.....	132,700
Dist. 4 (Southwest)	209,950	.....	209,950
Dist. 3 (Gulf Coast)	403,500	.....	403,500
Dist. 5 (Eastern)	33,925	.....	33,925
Dist. 6 (Eastern)	88,575	.....	88,575
East Texas field	282,000	.....	282,000
Dist. 7-C (West)	53,275	.....	53,275
Dist. 8 (West)	708,825	.....	708,825
Dist. 7-B (W. Central)	69,325	.....	69,325
Dist. 9 (N. Central)	141,850	.....	141,850
Dist. 10 (Panhandle)	92,250	.....	92,250
Utah	3,500	4,000	3,400
Wyoming	159,500	154,000	160,200
Total United States	*5,291,000	5,190,000	5,279,150
Change from previous week, up	11,850		
Canada	71,310	.....	63,620

Total U. S. production January 1-June 24 ..... †883,839,600 bbl.
Same period last year (crude plus cond.) ..... 908,640,925 bbl.

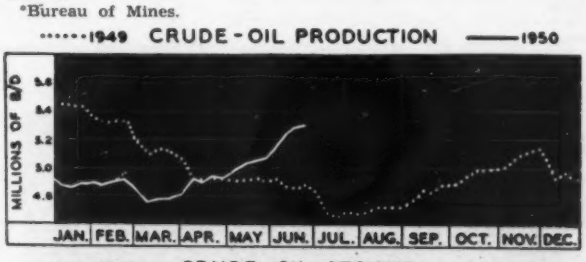
*Not incl. 103,735 bbl. condensate. †Incl. 17,051,125 bbl. condensate.

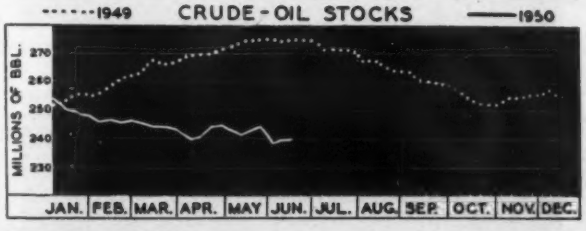
CRUDE-OIL STOCKS BY STATES OF ORIGIN*

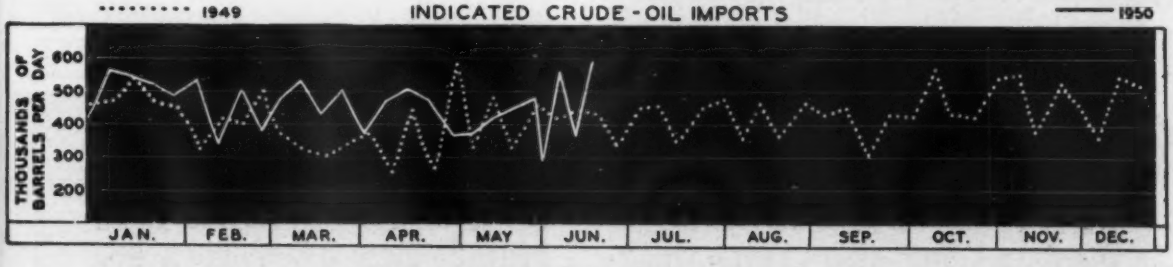
(Thousands of barrels)

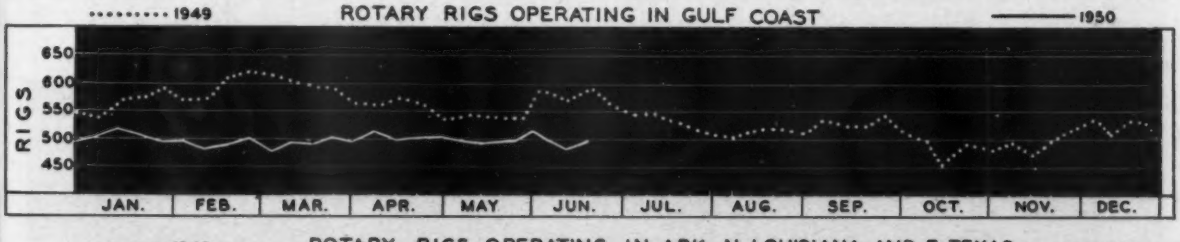
	June 17, 1950	June 10, 1950	June 18, 1949
Pennsylvania Grade	2,916	2,860	3,004
Other Appalachian	1,582	1,570	2,067
Illinois, Indiana, Michigan	9,400	9,537	14,391
Arkansas	2,777	2,883	3,002
Louisiana	15,332	15,189	14,980
North	3,362	3,299	3,339
Gulf	11,970	11,890	11,641
Mississippi	2,326	1,951	3,277
New Mexico	6,073	5,893	7,795
Oklahoma and Kansas	33,955	35,149	40,402
Texas	110,683	109,469	128,782
East Texas	15,749	15,285	17,934
West Texas	40,427	40,284	51,368
Texas Gulf	26,738	26,925	30,247
Other Texas	27,769	26,975	29,233
Rocky Mountain	12,550	12,679	14,233
California	35,492	36,327	34,877
Foreign	6,776	5,957	8,146
Total	239,862	239,464	274,956

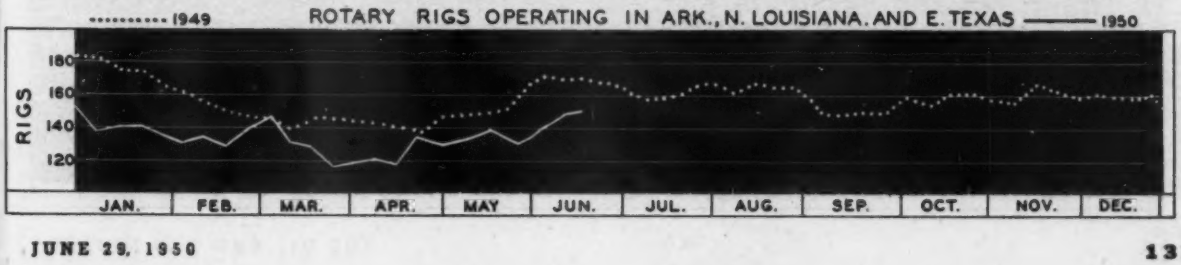
*Bureau of Mines.










1949 ROTARY RIGS OPERATING IN ARK., N. LOUISIANA, AND E. TEXAS 1950
RIGS
180
160
140
120
JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC.

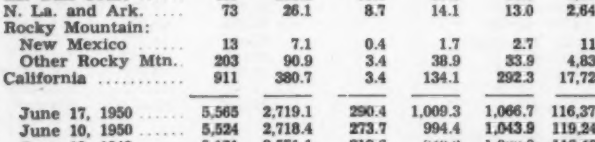
XUM

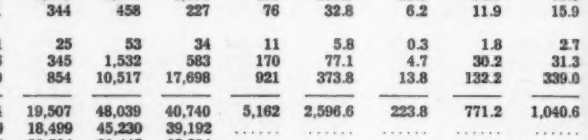
A.P.I. REFINERY REPORT, JUNE 17

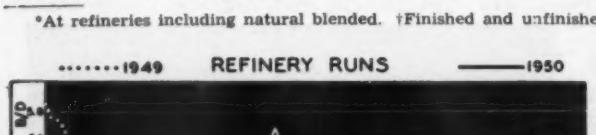
(Thousands of barrels)

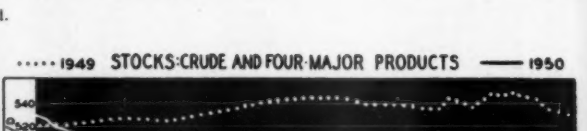
District—	Daily avg. crude runs	Daily average production				Stocks at refineries, bulk terminals, in transit and in pipe lines				Bureau of Mines, June 1949				
		Gasoline*	Kerosine	Distillate	Residual	Gasoline†	Kerosine	Distillate	Residual	Daily avg. crude runs	Daily average production: Gasoline*	Kerosine	Distillate	Residual
East Coast	889	360.7	25.9	180.6	189.2	25,673	6,744	12,248	10,750	694	285.9	24.3	114.0	143.9
Appalachian:														
District 1	87	41.3	3.3	10.3	7.7	2,525	357	505	344	90	42.8	3.1	8.5	6.3
District 2	72	36.6	3.1	9.4	17.0	789	98	193	158	58	29.9	1.8	4.7	10.7
Ind., Ill., Ky.	1,065	563.0	69.6	146.4	148.1	23,174	3,594	7,079	3,200	865	487.6	40.8	103.3	121.3
Okla., Kans., Mo.	489	266.3	13.4	104.3	62.4	12,135	1,072	4,224	1,102	423	236.1	18.8	81.3	57.2
Inland Texas	207	138.0	10.2	28.6	40.4	3,417	421	1,042	691	217	161.5	11.6	19.2	45.6
Texas Gulf Coast	1,137	586.6	96.0	254.3	200.0	17,762	3,010	7,164	4,293	1,236	647.8	68.5	170.1	224.9
La. Gulf Coast	419	221.8	53.0	86.6	60.0	5,591	2,643	3,024	1,660	401	215.5	29.9	94.0	41.8
N. La. and Ark.	73	26.1	8.7	14.1	13.0	2,641	344	458	227	76	32.8	6.2	11.9	15.9
Rocky Mountain:														
New Mexico	13	7.1	0.4	1.7	2.7	111	25	53	34	11	5.8	0.3	1.8	2.7
Other Rocky Mtn.	203	90.9	3.4	38.9	33.9	4,836	345	1,532	583	170	77.1	4.7	30.2	31.3
California	911	380.7	3.4	134.1	292.3	17,720	854	10,517	17,698	921	373.8	13.8	132.2	339.0
June 17, 1950	5,565	2,719.1	290.4	1,009.3	1,066.7	116,374	19,507	48,039	40,740	5,162	2,596.6	223.8	771.2	1,040.6
June 10, 1950	5,524	2,718.4	273.7	994.4	1,043.9	119,249	18,499	45,230	39,192	.....	.....	.....	.....	.....
June 18, 1949	5,171	2,571.1	218.6	746.9	1,099.0	116,403	22,504	61,445	65,594	.....	.....	.....	.....	.....

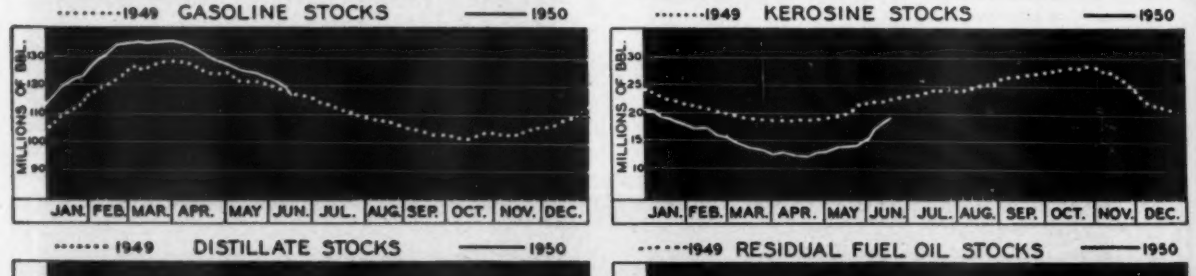
*At refineries including natural blended. †Finished and unfinished.











CRUDE PRICES

GRAVITY SCHEDULE

Gravity—	Signal Hill, Calif.	Okla-homa, Kansas	Gulf Coast Tex.*	West Tex.†
18-18.9	$1.53	....	....	....
19-19.9	1.63	....	....	....
20-20.9	1.73	$2.25	....	$2.12
21-21.9	1.82	2.27	....	2.14
22-22.9	1.92	2.29	....	2.16
23-23.9	2.02	2.31	....	2.18
24-24.9	2.12	2.33	$2.56	2.20
25-25.9	2.22	2.35	2.58	2.22
26-26.9	2.31	2.37	2.60	2.24
27-27.9	2.37	2.39	2.62	2.26
28-28.9	2.42	2.41	2.64	2.28
29-29.9	2.48	2.43	2.66	2.30
30-30.9	2.54	2.45	2.68	2.32
31-31.9	2.59	2.47	2.70	2.34
32-32.9	2.64	2.49	2.72	2.36
33-33.9	....	2.51	2.74	2.38
34-34.9	....	2.53	2.76	2.40
35-35.9	....	2.55	2.78	2.42
36-36.9	....	2.57	2.80	2.44
37-37.9	....	2.59	2.82	2.46
38-38.9	....	2.61	2.84	2.48
39-39.9	....	2.63	2.86	2.50
40 and above	....	2.65	2.88	2.52

*For crude from Daboval, El Campo, and Sand Point.

†Includes Lea County, New Mexico. Last general price change represented a 50-cent increase becoming effective December 6, 1947. Above changes do not include recent reductions of a few buyers applying principally to low-gravity grades.

FLAT CRUDE PRICES

Representative posted schedules per barrel.

East Texas†	$2.65
Kettleman Hills, California*	2.77
Beauregard Parish	2.60
Illinois Basin	2.77
Pecos County, Texas (Yates)	2.35
Bradford, Pennsylvania	3.75
Eastern Ill. and Western Ind.†	2.77
Tomball, Texas Gulf Coast	2.83

*37°-37.9°. †35° and above.

GASOLINE markets continue strong in all areas. Operators report only moderate volume offered in New York Harbor at regular posting of 12.25 cents a gallon. Demand for quality gasoline at Gulf Coast ports has been very heavy. The general tone of the Group 3 market improved last week with many suppliers expecting an increase in the low of quoted prices.

Gasoline stocks took the first big drop of the season during the week ended June 17 when the reduction was 2,875,000 bbl. This brought total stocks slightly under the level of the same week last year and East-of-California stocks about 1,000,000 bbl. under. Indicated refinery demand for the week was a little more than 3,100,000 bbl. daily. If demands continue near this high level, stocks will be reduced enough to produce an upward pressure on gasoline prices.

Group 3 quotations for kerosine and distillate fuels were slightly lower for the week, but most suppliers feel that the combination of relatively low stock levels and high demand potentials for the coming heating season will prevent any big drop in prices.

Oil-burner sales so far this year are running almost 45 per cent greater than in the same period last year despite increased competition from natural gas. Sales for the year are expected to be surpassed only by the peak year of 1947. Distillate demands for the winter months, based on normal weather, will be 12 to 15 per cent greater than last winter. This will call for some heavy stock building between now and October.

Increased demand for lubricating oils was a factor in the increase in prices paid for Pennsylvania Grade crude. The change amounted to 10 cents a barrel and was effective June 21.

REPRESENTATIVE QUOTATIONS

Representative spot-market quotations of leading suppliers as of June 26, 1950. Figures are f.o.b. plant for tank-car shipments in cents per gallon, except for residual fuel oil which shows the price per barrel and wax, in cents per pound.

GASOLINE, KEROSINE, AND FUEL OILS

	Mid-Continent Group 3	New York Harbor (barge)	Texas Gulf Coast
Regular gasoline, 80-82 octane	10½-10½	12.25	10½-11
Premium gasoline, 86-88 octane	10¾-11½	13.25	11⅜-11¾
42-44 w.w. kerosine	8¼-8½	8.9-9.1	8-8½
No. 2 straw fuel oil	7⅜-7¾	7.6-8.0	7-7¼
No. 6 residual	$1.65-1.70	$2.05	$1.65-1.80

NATURAL GASOLINE

	Group 3	North Texas	N. La.
Grade 26-70	5⅛	4⅝	4⅞
Grade 18-55	6.15	5.65	5.9

LUBRICATING OILS

South Texas

200 vis., No. 2-3 neutral	11.5
750 vis., No. 3-4 neutral	13.75
2,000 No. 5-6 neutral	15.5

Mid-Continent

150-160 vis., D bright stock, 0-10 pp.	18-18.5
200 vis., No. 3 neutral, 0-10 pp.	12.5

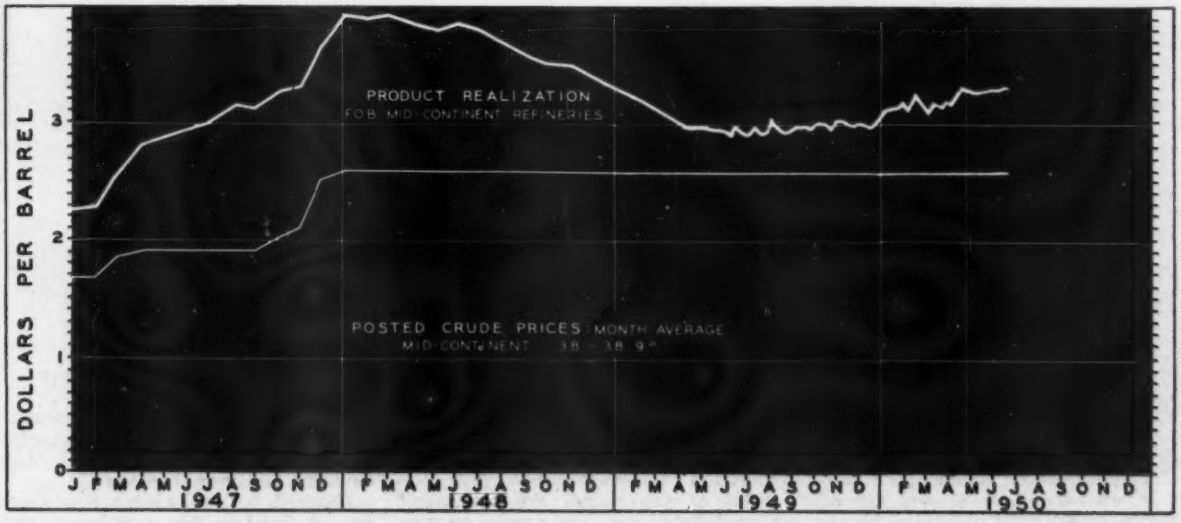
Western Pennsylvania

145-155 vis., 10 p.t. bright stock	20.5
180 vis., 0 p.t. neutral	21.5

WAX

Mid-Continent

132-134 A.M.P.	4.50


PRODUCT REALIZATION
F.O.B. MID-CONTINENT REFINERIES
POSTED CRUDE PRICES: MONTH AVERAGE
MID-CONTINENT 38 - 38.9°
DOLLARS PER BARREL
0
1
2
3
J F M A M J J A S O N D
1947
J F M A M J J A S O N D
1948
J F M A M J J A S O N D
1949
J F M A M J J A S O N D
1950

In this trend chart refinery realization is based on average Mid-Continent grade crude oil (not 38° gravity only) and average prices for refinery products as published in The Oil and Gas Journal basis Oklahoma (Group 3). Refinery yields confined to gasoline, kerosine, distillate, and fuel oil. Realization averaged $3.34 for week ended June 17, $3.35 for previous week, and $2.97 for June 1949.

XUM

EQUIPMENT MEN . . . in the News

Grancell Celebrates Twentieth Anniversary

I. H. GRANCELL

I. H. Grancell, manufacturer of Bestolife lead seal joint compound, will celebrate this year his twentieth year in business.

The need for a more effective pipe-joint compound gave Grancell the idea, 20 years ago, of using pure metallic lead as the base for a new type compound. He developed a product that would reduce friction, allowing a joint to make up to maximum design position, helping to smooth and work harden surfaces, instead of tearing and grinding them.

The compound developed by Grancell was used extensively first in the drilling industry in making up strings of drill pipe. Later many refineries made use of the compound on threaded pipe, flange bolts, and other high-temperature threaded fittings.

Myers Made General Sales Manager, Fibrous Products

Frank L. Myers has been appointed general sales manager of the fibrous-products division of Union Asbestos & Rubber Co., Chicago, with headquarters of the division at Cicero, Ill.

Prior to joining Union Asbestos in 1948, Myers was with Owens-Corning Fiberglas Corp. and active in heating, ventilating, and air-conditioning circles. He will supervise the sale of pipe insulation, metal mesh blankets, tailored insulations, packings, gaskets, textiles, sound-absorbing blankets, and specialized building materials evolving out of basic fibers in Union Asbestos & Rubber Co.'s plants in Cicero and Earlville, Ill.; Paterson, N. J.; McGregor, Tex.; and Marshville, N. C.

Thompson Instructs Bankers On Oil Production Loans

R. Elmo Thompson, vice president of First National Bank & Trust Co., Tulsa, lectured on the subject "Formation of Oil-Production Loans" to banker enrollees at the Southern School of Banking at Louisiana State University, Baton Rouge, June 12.

It was the first session for the school, which was organized because of the popularity of banking schools held at Rutgers and Wisconsin universities. Enrollment was limited to 100 practicing bankers from the southern states.

Thompson, whose banking background has centered on oil financing, was the first speaker to introduce the subject of oil on any of the banking schools curriculums.

Franks Sets Up New Field Sales and Service Staff

A new field organization arrangement to facilitate sales, engineering, and repair service for well servicing and drilling units has been inaugurated by Franks Manufacturing Corp. of Tulsa, according to Art Knight, sales manager.

District managers have been appointed for seven areas as follows: K. M. Lamer, (1), with headquarters at Odessa, Tex., to serve West Texas and New Mexico; Albert Hastings, (2), Kilgore, Tex., to serve East Texas, northern Louisiana, and Arkansas; E. R. Rudy, (3) Alice, Tex., to serve Southwest Texas; and Vern Alley, (4), Houston, to serve Houston, Gulf Coast, and southern Louisiana.

R. E. Knobloch, (5), Great Bend, Kans., to serve Kansas; A. J. Rogers, (6), Casper, Wyo., to serve the Rocky Mountain area; and T. H. Alexander, (7), Mount Vernon, Ill., to serve the Illinois basin. Oklahoma will be served from the Tulsa headquarters and factory.

California will be served by the Franks branch plant at Compton, Calif., under the sales direction of R. M. White, (8), and the service direction of George Lewis, (9).

All of the points are company-owned distribution and service centers with a complete stock of parts, and resident, factory-trained, experienced men, capable of making repairs.

National Aluminate to Introduce New Catalyst

A new supplier of spray-dried microspheroidal cracking catalyst will soon appear in the oil-refinery field, according to an announcement by president H. A. Kern of National Aluminate Corp., Chicago.

An expansion program for National Aluminate Corp.'s Catalyst Division plant calls for the installation of complete equipment for producing microspheroidal catalyst by spray-drying operations.

Addition of this latest type equipment will virtually double the overall production capacity of the Catalyst Division. National Aluminate's Catalyst Division will continue to provide a ground-type cracking catalyst for the petroleum industry.

DeGroote Honored by Ohio State University

Melvin DeGroote, vice president of Petrolite Corp., Ltd., division of Tretolite Co., was awarded Ohio State University's Lamme medal at commencement exercises, June 9.

The Lamme medal is one of Ohio State's highest awards, given annually to a graduate in recognition of "meritorious achievement in engineering or the technical arts."

DeGroote was graduted, in the class of 1915, with a B.S. in chemical engineering, and later earned the professional degree of chemical engineer. He holds some 518 patents, either as sole or joint inventor, the majority of which are concerned with chemical demulsification and dehydration of emulsified crude oils.

He has been affiliated with Tretolite Co. since 1924 and now holds the position of vice president in charge of research, development, and patents.

Mitchell Will Represent P-B in Scurry County Area

E. G. Mitchell has been named sales representative by J. P. Magoffin, general sales manager, Patterson-Ballagh Division of Byron Jackson Co.

Mitchell will make his headquarters at Snyder, Tex., and cover the Scurry County area. He will handle sales and service of the complete line of P-B products.

Alcoa Completes East St. Louis Research Building

Exterior view of Alcoa's new research laboratory, East St. Louis, Ill. Note the development laboratory at the rear.

Completion of a new research building at East St. Louis, Ill., has been announced by Aluminum Co. of America. The new laboratory, an attractive, three-story building faced with brick, replaces older accommodations at the nearby plant of Aluminum Ore Co., a wholly owned subsidiary of Alcoa.

A branch of Alcoa's aluminum research laboratories, the East St. Louis unit will develop and improve chemical products derived from bauxite, and will investigate methods involved in producing them.

Since the founding of the laboratory in 1923 by G. H. Wagner, now assistant director of research and present administrative head of the Midwestern branch, research scientists at the East St. Louis center have been responsible for a number of outstanding achievements. Especially noteworthy are improvements in the Bayer process for extracting alumina from bauxite and the development of important processes for using low-grade ores. Other accomplishments include commercial production of activated alumina, insecticide cryolite, and gallium.

From its beginning as a two-man operation in 1923, the East St. Louis laboratory has grown steadily until today it employs about 100 persons. Wagner continues as local administrative head of the laboratory and the integration of the many research activities is carried out by Dr. J. W. Newsome, chief of the laboratory.

Stottlemyer to Manage National's Northwest Area

National Supply Co. has announced the appointment of Robert D. Stottlemyer as division sales manager of its Northwest division, with headquarters at Casper, Wyo. After graduating from University of Pittsburgh in 1941 with a degree in petroleum engineering, and 4 years' service in the U. S. Army, Stottlemyer served with Gulf Oil Corp. until joining National Supply as drilling equipment engineer in 1946 at Toledo.

Later Stottlemyer was transferred, in the same capacity, to the company's plant products division. In October 1948 he was made division engineer at Casper and served in that capacity until his recent promotion.

Waukesha Sells Sun Filters

Appointment of Waukesha Sales & Service, Inc., of Houston, as authorized distributors for Sun oil filters in western Louisiana, Texas, and New Mexico, has been announced by Paul Myers, sales manager for Sun Engineering Co. of Oklahoma City. Waukesha will stock Sun filters and accessories in all of its 10 stores.

Lunkenheimer Names Pauly As New York Manager

Melvin W. Pauly has been appointed New York manager of Lunkenheimer Co., Cincinnati valve manufacturer. Pauly, associated with the valve industry for over a decade, has already assumed responsibility for Lunkenheimer's New York operation.

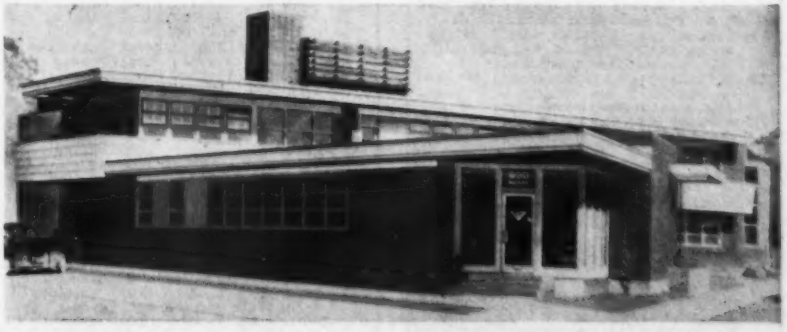
In another release, Lunkenheimer announced the retirement of Fred G. Berling, advertising manager of the firm. The functions of the advertising department will be consolidated with the sales department. Some advertising functions will be transferred to the firm's advertising agency, Norman Malone & Associates.

Happy Announces New Line Of Cooling Equipment

Leo C. King, sales manager, has announced Happy Co.'s new line of air-cooled, finned-tube, radiator-type cooling equipment. Changes included in new design, according to King, are: improved fan shrouding, larger fan diameter in some sizes, better support of fan and shaft, stronger construction, elimination of air leaks, better distribution of air through cooling coils, easy insertion of gas and oil-cooling sections in the smaller units, placing of gas-cooling sections in the cooler portion of the air stream for lower final temperatures, and improved jacket-water flow arrangement.

Designs include both vertical and horizontal cooling sections, forced and induced draft. Consideration has been given to proper sizing of units to give complete range of capacities by using multiples of basic units for flexibility, or single large units where variable speed drive is available. Happy will carry ample stocks of parts in field stores for both new and old units and will continue service to the customer through field representatives.

Southern Geophysical Moves to New Quarters



This new building, located within 5 minutes of downtown Fort Worth, has recently been occupied by Southern Geophysical Co. The firm has 10 seismograph field parties operating out of the Fort Worth and Midland offices. From a staff of 2 in 1944, the company has grown to a point where it now employs about 200 men and women in Texas, Oklahoma, New Mexico, Arkansas, Kansas, and Louisiana.

XUM

Your MARKET PLACE FOR THE OIL AND GAS INDUSTRY...

CLASSIFIED ADVERTISING

UNDISPLAYED CLASSIFIED 12c a word one issue. 10% Discount three or more issues. $3.00 minimum charge. Blind Box in our care counts nine words. Payable in Advance.

DISPLAY CLASSIFIED
$12.00 a column inch one issue . . .
10% Discount three or more issues.

EQUIPMENT FOR SALE

PORTABLE ROTARY RIG DRAW WORKS (Wilson) for Shallow Oilwell (about 2000') Drilling, with telescoping derrick mast, 4 legs, Roller Bearing Crown Block, all unitized with ROTARY TABLE on long skids, and tires — HIGHLY PORTABLE. Also: 7¼x10 mud pump with Heavy Duty Climax Engine. Will sell above items for $12,000 including BREWSTER oilbath Rotary Table. C. M. BARRINGTON, Phone 4915, Box 831, Coleman, Texas.

1—Shot Hole Drill Truck, Chassis WHAX 1947 Dodge, Mayhew Drilling Unit—Model 600 Complete w/ Gardner - Denver 4½x5 mud pump. Mast 19 feet—Kelly 12½ feet. 100 feet 2¾" Used Drill Rod. 3—Dodge Water Trucks: 2 Ton Chassis WHAX—2 Ton, 400 Gallon Tank, Tulsa 18—Winch. 1—Model DDH—Oliver Cletrac Tractor w/ Hercules 6 cylinder Diesel Engine, Electric Starter and battery ignition complete with southwest cable controlled trailbuilder and Buckeye Double Drum Power Control Unit. If interested, write or call The Atlantic Refining Company, c/o Mr. V. H. Gray, P. O. Box 2819, Dallas, Texas, Telephone P7-6484, Station 8-273, Dallas.

VALVES—70 new 1" Crane Globe, flanged, 150 lbs. Cat #3636XR—$15.00 each. H. Loeb & Son, 4643 Lancaster Ave., Phila. 31, Pa.

FOR SALE: New 1¼" Improved plow steel wire lines 6 x 19 R L Hemp Core. One Spool 3500' at 28c per ft. Four Spools 1800' at 24c per ft. Thirty Spools 600' at 20c per ft. FOB Okla. City, Okla. General Tool & Supply Co. P.O. Box 4387—1319 S.E. 29th. St., Okla. City, Okla.

Used Wood Tanks For Water-Flooding

5—vertical cypress tanks closed, 10' dia. on bottom, 9' dia. on top, 8' high, 2¼" staves, have manholes.
18—vertical cypress tanks, open top, 8' dia. on bottom, 7' 6" dia. on top, 6' high, 2¼" staves
6—vertical oak tanks, closed, 7' 4" dia. on bottom, 6' dia. on top, 8' high, 2½" staves, have manholes
10—vertical cypress tanks, closed, 9' 6" dia. on bottom, 8' 6" dia. on top, 7' 6" high, 2¼" staves, have manholes
7—vertical cypress tanks, closed, 11' dia. on bottom, 10' dia. on top, 8' 6" high, 2¼" staves, have manholes
28—vertical cypress tanks, closed, 10' dia on bottom, 9' dia. on top, 17' 4" high, 2¼" staves, have manholes
2—vertical redwood tanks, open top, 17' dia. by 17' high, 3" staves
All tanks complete with round hoops and lugs.

These tanks were used for beer storage and are in
FIRST CLASS CONDITION

Other sizes also available. Please write for complete specifications and prices.

* * * * * *

New and Guaranteed Used STEEL TANKS

Bolted Type up to 10,000 barrel. Welded and Riveted up to 74,000 barrel.

Your inquiry will be appreciated.

A. GREENSPON PIPE CO., INC.
3615 Olive St., St. Louis 8, Mo.

EQUIPMENT FOR SALE

FOR CABLE TOOLS
DEGEN PIPE AND SUPPLY CO.
Box 107, Red Fork Station, Tulsa, Oklahoma

COOPER Single Drum Winch Tractor, Model W-201-26, with 45-foot mast, A-1 condition. $2250.00. Rogers Pipe & Supply Co., Tulsa, Phone 3-2072.

FOR SALE: Wilson Mogul drilling rig with portable derrick complete. Suitable for 4500' depth. Now running in Bebee Field, Pontotoc County, Oklahoma. Contracts available. Lake Oil Company, Ada, Oklahoma.

64' MAST, constructed of 8" Pipe with box type welded reinforcing, ROLLER BEARING CROWN BLOCK. Capacity 150,000# or more. Will sell for $900.00. Also, have a Boykin rotary table, good shape, for $800.00. C. N. ADKISSON, McCamey, Texas.

Several Army Surplus 4½" x 6" Gaso Duplex 1860 Pumps — two piece skid mounted with Chrysler 8 cylinder engines. Will sell pumps only or complete units about half price.

H. H. COFFIELD
ATTN: W. H. Orr
Phones: 132—Rockdale, Texas
A-55064—Houston, Texas

EQUIPMENT FOR SALE

CULVER Vertical Furnaces for exfoliating Perlite $10,000 compared to $100,000 for old style, also purest of Perlite for sale. Particulars Box 2153-OJ, Denver, Colo.

200,000 good clean used fire brick, arch type, suitable for building antique residences, sewer manholes, or other uses. Z. J. Harrison, Poteau, Oklahoma.

APPROXIMATELY 4300' of 3½" FH Drill Pipe, two 4½" x 30' Drill collars, Wilson elevators, Mission slips, one American overshot, slips for same, all sizes, few other 3½" items, located at Upton, Wyoming. Priced at a real bargain. Kiowa Drilling Company, Inc., 717 Union National Bank Building, Wichita 2, Kansas. 3-8013.

THE INTERSTATE PIPE & SUPPLY COMPANY
Marietta, Ohio
P.O. Box 548 . . . Phone 2468

First Class Used Casing—Lapweld—
Low Prices
10¾" O.D.—8⅝" O.D.—7" O.D.—5½" O.D.
2" 4½# tubing, both regular and upset.

BROWN STRAUSS CORP.

1546 Guinotte Ave., Kansas City 10, Mo.

Dismantling Two Major Oil Refineries

Unusual opportunity to pick up real bargains. Everything offered either in place, or knocked down ready to ship. Never before have prices been so low. Contact us at once for your needs, and get our prices.

VERTICAL STORAGE TANKS

1—55,000-bbl. Riveted Steel Tank
2—15,000-bbl. Riveted Steel Tank
6—10,000-bbl. Riveted Steel Tank
4— 5,000-bbl. Riveted Steel Tank
2— 4,500-bbl. Riveted Steel Tank
9— 3,700-bbl. Riveted Steel Tank
2— 3,100-bbl. Riveted Steel Tank
2— 2,600-bbl. Riveted Steel Tank
7— 1,900-bbl. Riveted Steel Tank
3— 1,600-bbl. Riveted Steel Tank
3— 1,500-bbl. Riveted Steel Tank
4— 1,000-bbl. Riveted Steel Tank
2— 350-bbl. Riveted Steel Tank
1— 300-bbl. Riveted Steel Tank
2— 746-bbl. Spheroid Steel Tank

HORIZONTAL STORAGE TANKS

2—8-0 x 36-0 x 3/16"; 14,000 gallon; 101 P.S.I.W.P.; riveted and welded
3—8-0 x 20-0 x 3/16"; 7,500 gallon; 101 P.S.I.W.P.; riveted and welded
6—6-0 x 24-0 x 3/16"; 4,250 gallon; 101 P.S.I.W.P.; riveted and welded
2—7-6 x 28-0 x 7/32"; 9,250 gallon; 101 P.S.I.W.P.; riveted and welded
3—6-0 x 25-4 x 7/32"; 5,400 gallon; 101 P.S.I.W.P.; riveted and welded
3—7-0 x 32-6 x 7/32"; 9,350 gallon; 101 P.S.I.W.P.; riveted and welded
9—9-0 x 23-6 x 1/4"; 12,000 gallon; 101 P.S.I.W.P.; riveted and welded
1—7-0 x 30-0 x 7/32"; 8,000 gallon; 101 P.S.I.W.P.; riveted and welded

1—Bubble Tower, flash tower for Cracker. Upper part Stainless Steel lined. 10-0 x 39-9 x 1 1/8" thick x 1" heads. 3 trays; 63 C.I. bubble caps/tray. 3 baffle plates 75 psi. @ 750 F.; riveted construction.
1—Fractionating Tower for Cracker. 10-0 x 52-6 x 1 1/8" thick x 1" heads. 16 trays; 63 C.I. bubble caps/trays; 75 psi. @ 750 F.; riveted construction.
1—Gasoline Weathering Tower; 3-6 x 50-0 x ½" thick; 200 psi. test; 2-4 x 10-0 condenser on top; 4 trays with 16" spacing.
1—Dephlegmator; 5-0 x 21-6 x 7/16" thick; 100 psi. test; 5 trays, 20" spacing.
1—Evaporator; 7-6 x 21-6 x 7/16" thick; 100 psi. test; 4 trays, 20" spacing.
1—Braun Vacuum Tower; 5-0 x 44-7 x 3/8" thick; 11 trays; manway each tray.
1—Absorber; 5-0 x 30-0 x 3/8" thick; 120 psi. test, w/Tulsa type mist extractor; 10 trays; 20" spacing.
1—Absorber; 6-0 x 28-0 x 3/8" thick; 30 psi. test; 16 trays, spacing 16".
3—10-0 x 30-0 x ½" thick; 18,000 gallon capacity. One double compartmented. Riveted construction.
1—Reactor for Cracker; 3-0 x 32-0 x 4" thick; approximately 1" concrete lining. Forged construction.
1—Reactor; 10-0 x 32-0 x 1¾" thick x 7/8" head. Welded construction.
2—9-0 x 33-0 x 1 1/4"; riveted construction.
1—9-2⅞" x 39-1 x 1 7/16" thick; 1—36" manway and 1—16" manway.

MANY OTHER ITEMS TOO NUMEROUS TO LIST. WRITE FOR BOOKLET, OR ARRANGE FOR PERSONAL INSPECTION.

EQUIPMENT FOR SALE

FOR SALE: Wilson Giant draw works, powered by two JL-1335 Buda engines with Wilson chain compound. Unit completely overhauled. Can sell separate or with a complete rig. For information, call or write Melton Supply Company, Box 1360, Seminole, Oklahoma.

WAR SURPLUS MACHINERY

Gaso, Byron Jackson, Aurora, Wayne, Lombard & Hale Fire Pumps with Engines, 1½ to 25 KW Generator Sets or Light Plants, Engines, Suction Hose, Fire Hose, Victaulic Couplings & Etc. Write for listing. H. A. McCarthy, 310 Thompson Bldg., Phone 5-3296, Tulsa, Oklahoma.

ONE 24-L Bucyrus-Erie Drill with 48′ derrick, derrick hoist, cat heads, and swabbing gear. Price $6000.00. Would sell complete with tools. CLAYPOOL DRILLING COMPANY, St. Elmo, Illinois.

TWO TYPE 8—80 H.P. direct driven Bessemer gas engines, one with 16 x 20 compressor, other with 32 x 20 compressor. Location Desdemona, Texas. $750.00 each. Desdemona Gasoline Co., 401 Danciger Bldg., Fort Worth, Texas.

TWO Gardner Denver Compressor Units size 12 x 11 and 4¾ x 11, direct connected with 100 HP electric RPM motor, complete with all equipment; located at Refugio, Texas; in service forty-five days. Will take reasonable discount. Clymore Petroleum Corporation, 1204 Alamo National Building, San Antonio, Texas.

41 ALLISON ENGINES
$395.00 Each

V-1710-49 and V-1710-53 12 cyl. Allison engines. 100 HP. No time since overhaul. Less nose gear. Can be converted to natural gas.

GROBAN SUPPLY COMPANY
1307 S. Michigan Ave., Chicago, Illinois

TWO COMPLETE STRINGS OF ROTARY DRILLING TOOLS

One with U 34 Unit draw works; 6 cyl. GMC Diesel engine; 7¼ x 10 Type A Emsco triple X power pump. The other with P-150-46 Emsco draw works; R 61 Climax engine; 7¼ x 12 FXZ Gardner Denver pump with P-225 Climax engine. Both have 3,000 ft. drill pipe and all necessary tools and equipment. Also 16,000 ft. new and used casing; 10,000 ft. new and used tubing.

PAUL DORAN ESTATE
Fehren Bldg., Vandalia, Illinois. Tel. 460

STEEL PIPE

Available for immediate delivery

2″ Standard 10,500 feet
3″ Standard 7,500 feet
4″ Standard 22,000 feet
6″ Standard 28,000 feet
8″ Standard 42,000 feet
10″ Standard 18,000 feet
12″ Standard 10,000 feet

All 20 foot random lengths
Excellent used condition

Write—Wire—Phone

SONKEN-GALAMBA CORPORATION
2nd and Riverview (K-603)
Kansas City 18, Kansas
THatcher 9243

EQUIPMENT FOR SALE

FOR SALE: One combination houseboat and boathouse. Built on steel barge 85 ft. long x 28 ft. wide x 9 ft. deep. One end constructed with wings similar to a floating drydock with cradle to accommodate a 42 ft. cruiser. An installed pump will pump the barge down, allowing the cruiser to be floated into place. The barge is then pumped up and the cruiser stored dry. Entire barge is covered with roof and sides and boat end is closed with overhead door. Opposite end houses very fine quarters, lounge, galley and washroom and an awning covered sun deck. Ideal for the sportsman or oil operation in inland waters. To our knowledge the only vessel of its kind in existence. Can be inspected by appointment at Rockport, Texas. Write Gulfport Shipbuilding & Drydock Corporation, Port Arthur, Texas, or call 2-6486.

FOR SALE: One, type-100 National Drilling Rig has drilled only two wells. With 800,000 pounds capacity jack-knife derrick. Box D-448, The Oil and Gas Journal, Tulsa, Oklahoma.

FOR SALE

1—125 H.P. 350# Working Pressure "Oil Well Boiler," excellent condition. Completely reconditioned. Not used since last approved by State Boiler Inspector. Priced to sell. Make an offer.

POWELL BRISCOE, INC.
1916 First National Building
Oklahoma City, Oklahoma

EQUIPMENT FOR SALE

FOR SALE: FAILING Model 36—800 ft. capacity, A-1 condition; 500 ft. drill pipe, 4 x 5 Gardner-Denver pump, 1949 International water truck. Complete with tools, subs, bailers, etc. Priced right. Sam Clark, Jr., 217-4th Ave. E., Roundup, Montana. Phone 197R.

BARGAIN FOR QUICK SALE

Large Steam Rig Complete Ready to go. 14x14 Engine, 18″ & 20″ Pumps, 10,000′ 4½ Drill Pipe, 136′ Drk All 300 Ton Equipment. Everything Good Condition. **McDaniel & Beecherl Drlg. Co.,** 521 Republic Bank Bldg., Dallas, Texas, or Phone 3651, Odessa, Texas.

SAVE TIME — SAVE MONEY
New Line Pipe Priced Exceptionally Low

150,000′ 6⅝″ OD x .250″ Wall 17.02# New E. W. 40′ Lengths B/E 1000# Test.
5,000′ 10¾″ OD x .365″ Wall 40.5# New Seamless Grade B 40′ Lengths
6,000′ 12¾″ OD x .250″ Wall 33.37# New E. W. 40′ Lengths
60,000′ 12¾″ OD x .312″ Wall 41.51# New Seamless Grade B Range 3 B/E
15,000′ 14″ OD x .375″ Wall 54.57# New Seamless Grade A 40′ Lengths

This material is available for immediate delivery, quoted subject to prior sale.

OTHER SIZES LINE PIPE AND TUBING AVAILABLE. FOR PRICES CONTACT

A. J. STRUBEL
4946 Murdoch, Sidney 1791, St. Louis, Mo.

LOOK HERE FOR REAL BARGAINS

CONDENSERS AND EXCHANGERS

12—G-R, G fin sections, 1.9″ O. D. tubes, 120 # w.p., 108 sq. ft. surface each.

1—Vogt, condenser, type Z-75-2-2 shell and tube, 896 sq. ft. surface, 290-¾″x16 BWG admiralty tubes, floating head, shell size 20″x16′.

1—Vogt exchanger, type Z-450-2-1, shell and tube, 102 sq. ft. surface, 90-¾″x14 BWG, seamless steel tubes, floating head, shell size 12-¾″x6′.

1—Vogt reboiler, type KU-100-2-1, shell and tube, 1625 sq. ft. surface, 524-¾″ O. D. x 14 BWG seamless steel tubes, fixed head, shell size 47-¼″x16′.

2—Kellogg condensers, type 1-U-4, shell and tube, 1218 sq. ft. surface each, 158 1″ O.D. x 12 BWG seamless steel tubes, floating head, shell size 27″x14′7⅛″.

1—Kellogg condenser, type 1-S-2, shell and tube, 2720 sq. ft. surface, 889-¾″ O.D. x 16 BWG admiralty tubes, floating head, shell size 33″ x 15′-¾″.

1—Kellogg exchanger, type K-U-2, shell and tube, 1190 sq. ft. surface, 153-1″ O. D. x 12 BWG seamless steel tubes, fixed head, shell size 72″x21′ 4-½″.

1—Kellogg reboiler, type K-U-2, shell and tube, 2590 sq. ft. surface, 455-¾″ O.D. x14 BWG welded steel tubes, fixed head, shell size 74″x20′.

4—Kellogg condensers, type 1-S-2, shell and tube, 3745 sq. ft. surface each, 1224-¾″ O.D. x 16 BWG admiralty tubes, floating head, shell size 39-⅞″x19′-1-⅜″.

2—Kellogg reboilers, type K-U-2, shell and tube, 1850 sq. ft. surface each, 630-¾″ x 14 BWG welded steel tubes, fixed head, shell size 84″x22′-1-¾″.

1—Kellogg condenser, type 1-S-2, shell and tube, 3700 sq. ft. surface, 1027-¾″ O.D. x16 BWG admiralty tubes, fixed head, shell size 35-⅞″x18′-7-¾″.

1—Kellogg condenser, type 1-S-2, shell and tube, 838 sq. ft. surface, 357-¾″ O.D. x 16 BWG admiralty tubes, fixed head, shell size 21-¼″x10′-5-3⅝″.

1—Kellogg condenser, type 1-S-6, shell and tube, 606 sq. ft. surface, 196-¾″ x 16 BWG admiralty tubes, fixed head, shell size 14″x17′2″.

4—G-R, twin G-fin sections, type LSS, 1-¼″ I.D. x .20″ wall, 101 sq. ft. surface each.

1—Kellogg exchanger, type 1-4-2, shell and tube, 609 sq. ft. surface, 15-¾″ O.D. x 14 BWG welded steel tubes, floating head, shell size 8-⅝″x12′-10″.

1—Kellogg exchanger, type 1-S-2, shell and tube, 365 sq. ft. surface, 118-¾″ O.D. x 14 BWG welded steel tubes, floating head, shell size 14″x17′-4-½″.

1—Kellogg condenser, type 1-S-2, shell and tube, 277 sq. ft. surface, 188-¾″ O.D. x 16 BWG admiralty tubes, floating head, shell size 18″x9′-9-¾″.

1—Kellogg reboiler, type K-U-2, shell and tube, 359 sq. ft. surface, 59-¾″ O.D. x 14 BWG welded steel tubes, fixed head, shell size 28″x20′-3-½″.

1—Kellogg condenser, type 1-U-6, shell and tube, 2246 sq. ft. surface, 298-1″ O.D. x 12 BWG seamless steel tube, fixed head, shell size 36″x16′-4′-3/16″.

6—G-R sections, bare pipe, dual wall type, 6-1-⅛″ I. D. x .20″ wall x 23′ seamless steel tubes, shell tube size 3″x23′.

DULIEN STEEL PRODUCTS, INC.
of Washington
P. O. BOX 667
COTTON VALLEY, LA.
PHONE: COTTON VALLEY 26

Write—Wire—Phone for Complete Listings

XUM

EQUIPMENT FOR SALE

USED ROTARY AND CABLE TOOL DRILLING TOOLS, WIRE LINES. E. A. KELLY, BOX 861, OKLAHOMA CITY. PHONE 5-6407.

FOR SALE: One 7¼ x 14 FXK Gardner Denver power pump in first class condition. Late model pump with all new improvements. S. E. Frogge Equipment Company, Box 4455, Oklahoma City, Oklahoma, Phone 6-5518, Residence 2401 Moore.

FOR SALE—94′ Lee C. Moore Jackknife derrick. Folding type base 5′ 4″ high, 30′ long, 10′ cellar span and Portable Rig Model R-810-6 draw works, 36 x 8″ water cooled brakes, automatic and spinning line catheads powered by two 145 GKU Waukesha engines, butane and gas equipped. Price $17,500.000. Falco Drilling Co., Alice, Texas.

PACKAGED H_2S REMOVAL UNITS

We offer prompt shipment on skid-mounted hydrogen sulfide removal units for treating sour gas for pipe line or fuel gas purposes.

GRAFF ENGINEERING & EQ'PT. CO.
3415 Westminster, Dallas 5, Texas

FOR SALE

Nickel Cadmium Alkaline Batteries, for diesel engine starting, marine service or seismograph work. Twelve-four cell in wooden cases 16" high, 28½" long, 12" wide. Type D.K.M. 42. Amp. hours 290 Charge 58 amps for seven hours. Never been used, can be had at large discount.

OILFIELD SALVAGE CO., INC.
2019 Brooks St., P.O. Box 2589, Houston, Texas

FOR SALE

1—Model UE-60 Allis-Chalmers Swabbing Unit Mounted on 6 x 6 x 2½ ton GMC G.I. Truck, with 6-cylinder GM Gasoline Engine and 7 x 6 x 50 Single Leg Telescoping Pole with 2-18 inch Roller Bearing Sheaves—Engine on Unit Completely Reconditioned.

1—Model 5060 Ideco Skid-Mounted Well Servicing Unit with 525 Buda Engine, Equipped with Electric Starting System and 7741 Brown Lipe Transmission—Engine Completely Reconditioned.

3—Model EKHU Waukesha Gas-Butane Engines.

1—Model VIK Waukesha Gas-Butane Engine.

Write or Call

Empire Machinery Company, Ltd.
Box 4025—Phone LD-18
Odessa, Texas

FOR SALE

As whole or piece by piece, complete Natural Gasoline Plant Equipment. Now operating, will close July 1, 1950. Capacity 6500 Gallons a day, 125# W. P. 6 Charcoal absorber tanks 8″ Conns. & Valves, 3 Boilers, 2—65 H.P. and 1—80 H.P. Steam engines, water pumps, water tanks, all buildings, valves, fittings, regulators, 4 large oil absorber tanks with grids. Nut Charcoal for six tanks and extra supply. Gas Engines, Compressors, Storage Tanks, Cap. 2000 to 9000 gallons.

COMPLETE LIST FURNISHED ON REQUEST

ROSWELL T. HAPGOOD & CO.

P. O. Box 511

Charleston 22, W. Va.

EQUIPMENT FOR SALE

FOR SALE: Cardwell RL spudder, complete with 5″ tools, mast, light plant, steel tool house. Low down payment. Barnes Drilling Company, 22 West 4th, Tulsa, Oklahoma.

USED Franks Model SA-4500 Rotary Rig with 96 ft. derrick, rotary table, and Cummins engines. Excellent condition. Write Box D-574, The Oil and Gas Journal, Tulsa, Oklahoma.

SPUDDERS: Good used equipment. Fort Worth Models Super H. and C. Wichita 55. Wilson rotaries. Franks and Longyear machines. New and used tools and supplies. Fishing tools rented. Everything for well drilling. Pressey & Son, Pueblo, Colorado.

CORE Drill Equipment for Sale: Two "Franks" truck mounted core drills, 2,000′ capacity; one shop built truck mounted core drill, 1,600′ capacity. All mounted on KR-11 International trucks. Four KB-7 International oil field trucks with jin poles and model 34 Tulsa winches. Four pole trailers with bolsters, three of them equipped with dollies for holding pipe loads. Approximately 2,500′ used 2⅜″ x 20′ drill pipe with 3⅜″ tool joints. Contact Mr. K. J. Reid or Mr. W. H. Hawkes, P.O. Box 1654, Oklahoma City. Telephone 2-6381.

CATERPILLAR ENGINE Model D-13000; Gaso pumps 1742, 10″ stroke, unit skid mounted and in operating condition. Indiana-Illinois area. Sohio Pipe Line Co., 407 No. 8th Street, St. Louis, Mo., Attn: Mr. H. F. Fisher.

ENGINES: 3—150 HP ME 68 Murphy Diesels. Excellent condition. Will sell 60% off new price. Must convert rig to gas. Interested in National C-250 or 18″ Pump. Fitzpatrick Drilling Company, 433 So. Grant, Casper, Wyoming.

FOR SALE: One Gumbo Buster 26″ Oil Bath rotary table in good running condition. Attractive price. Melton Supply Company, Box 1360, Semniole, Oklahoma.

FOR SALE: One 7¼ x 14 Whelan model 11000 Slush pump. New fluid end, gear box A-1. Melton Supply Company, Box 1360, Seminole, Oklahoma.

EQUIPMENT WANTED

INTERESTED in 4′ late model radial drill with or without electric motor. Must be A-1 condition, standard make.
NATIONAL COOPERATIVE REFINERY ASSOCIATION
PURCHASING DEPARTMENT,
McPHERSON, KANSAS

WANTED

WANTED: SURPLUS Chemicals, Oils, Waxes, Solvents, Wastes and Residues of all kinds. Chemical Service Corporation, 98-06 Beaver St., New York 5, N. Y.

FOR SALE—MAPS

NEVADA OIL AND GAS LEASE MAPS

Complete and up-to-date lease maps of the state. Filing service. Daily and weekly filing information. Geologic advice.

UNITED ENGINEERS
409 Cheney St., Reno, Nev.—Phone 4535

FOR SALE

BEECHCRAFT

Executive Transport

D18S For Sale

Purchased new by corporation which is replacing with larger ship. N.C. 44641. License expires 4/21/51. Pratt and Whitney Wasp Jr. Engines, Model R-985, only 332 hours since P. & W. factory overhaul and new hydromatic propellors. Complete radio equipment including I.L.S. All C.A.A. bulletins have been complied with. Like new.

Price $40,000.00

NORTHERN ORDNANCE INC.
Minneapolis, Minnesota

HELP WANTED

WANTED: Refinery combination machinist pump and engine mechanic. Must be thoroughly experienced. Maximum age 40 years. Box D-554, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED—Geophysicist with geological background by independent oil company to review, interpret seismic data. Must have knowledge of instruments and techniques. Permanently located in Houston. State age, training, experience and expected salary. Address Box D-549, The Oil and Gas Journal, Tulsa, Oklahoma.

PROCESS ENGINEER: For independent refinery in Chicago Area. Engineering degree preferred. Must have minimum experience of 5 years in process work connected with Topping, Thermal Cracking, Catalytic Cracking, Treating and Plant Inspection. Replies will be held confidential. Address—P. O. Box 297, Blue Island, Illinois.

NEW 3000 BBl/day refinery has immediate vacancy for experienced shift supervisor qualified in vacuum distillation of asphalt and butane-propane operations. Transportation expenses paid. In reply, state experiences. Interested applicants write airmail to Pacific Refiners, Limited, P. O. Box 1900, Honolulu, T. H. Attention: "P.C."

WANTED: SEISMOGRAPH PARTY CHIEFS—For field work in Alberta, Canada. Single or married men, no children, preferred. Minimum two years party chief experience required with university geological or geophysical background. Salary open based on experience and general ability. Excellent opportunity for men willing follow field work. Box D-531, The Oil and Gas Journal, Tulsa. Oklahoma.

Engineer Wanted

Large Company with expansion program has an immediate opening for a Petroleum Engineer experienced in production, drilling, and well completion operations in the Louisiana Gulf Coast area. Experienced with inland water operations is desirable. Rapid promotion is proposed as employee assumes responsibility. Salary will be commensurate with applicant's qualifications. All applications will be handled confidentially.

Write Box D-568
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

WANTED

FOR CHEMICAL PLANT

Located in South

ESTIMATORS

Must be experienced engineers, under 40, familiar with Refinery and Chemical Plant design and capable of estimating process equipment installations from flow diagrams and specifications. Give full information, experience record and salary expected.

DRAFTSMEN-DESIGNERS

Preferably with ME, CE, or EE degree, under 40, with at least three years drafting experience in Chemical or Oil Industry. Give full information, experience record and salary expected.

BOX D-530
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

HELP WANTED

FOREIGN and Domestic Oil Employment Directory (including late supplement of oil companies and drilling contractors in Western Canada). Over 500 listings in drilling, production, refinery, natural gasoline, pipelines, geological, exploration, supplies, manufacturers, services and refinery and pipeline contractors, showing where to apply for jobs. Price $5.00. Oil Industry Mailing List, Box 2603, Tulsa, Okla. (Our 30th year).

CONTROLLER

Integrated Oklahoma oil company wishes to employ experienced, aggressive accountant under 45 years of age. Should possess initiative, ability to handle personnel, and experience in installation and operation of general accounting system and cost controls. Excellent future. Salary commensurate with qualifications. All replies confidential. Address Box D-550, The Oil and Gas Journal, Tulsa, Oklahoma.

ESTABLISHED Seismograph Company has opening for Party Chief. Two years minimum experience in charge of party and college degree in science or engineering required. This job offers adequate salary and profit sharing plan. Reply Box D-563, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION SUPERINTENDENT for independent oil company, experienced in Kansas, Oklahoma and Texas, including rotary and cable tool drilling, completion and acidizing of wells ranging in depth 5000 to 8000 feet. Definite experience needed handling production flowing and pumping. Do not apply unless well qualified and can furnish best of references. A real opportunity for an able man. Write P. O. Box 881, Tulsa, Oklahoma.

SALES ENGINEERS
OPERATIONS SUPERVISORS
PERFORATOR OPERATORS

Only Experienced Men Need Apply.

WRITE ONLY

WELEX JET SERVICES, INC.
3909 Hemphill Street, Fort Worth 9, Tex.

REPRESENTATIVE WANTED

Aggressive manufacturer's representative needed for Houston and Gulf Coast territory for sale of complete line of Oil and Gas Separators and related specialties for production, refining, and chemical industries. Firms having engineering graduate salesmen and no control accounts given preference. Replies should include number and background of sales personnel, territory actively covered, present active accounts. No supply houses or engineering companies need apply. Replies will be held confidential.

Box D-539
The Oil and Gas Journal
Tulsa, Oklahoma

SITUATIONS WANTED

GRADUATE Petroleum Engineer, three years experience with reservoir engineering firm and one and one-half years experience in drilling and production, desires connection with small company or independent in West Texas area. Details on request. Reply Box D-559, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED IN EAST TEXAS field, preferably near Kilgore or Overton, work supervising and producing lease or number of leases. Will do all flowing or pumping on per-well or percentage basis. Can furnish own manpower and car. If interested, contact Box D-546, The Oil and Gas Journal, Tulsa, Oklahoma.

SITUATIONS WANTED

REFINERY SUPERINTENDENT
Experienced and competent. Excellent record and references. Box D-556, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST, young, excellent health, married, 10 years' experience in Mid-Continent, Rocky Mountains, South America, desires responsible position with progressive independent or major. Thorough knowledge of all phases oil field practice. Not averse to travel or foreign assignment. Box D-562, The Oil and Gas Journal, Tulsa, Oklahoma.

RECENT GRADUATE GEOLOGIST seeking permanent position. Experienced in oil fields. Anything considered. R. P. Smith, 1206 South Baltimore, Tulsa, Okla., Phone 4-9311.

ATTENTION: Well established oil well drilling contractor desires to manage and supervise: Individuals', groups', small or medium-sized oil companies' drilling, production and operating problems in Central and Western Texas, and New Mexico. Personal interview by appointment is desired. Makin Drilling Company, Box No. 131, Ph. No. 131, Hobbs, New Mexico.

PROGRESSIVE PLANT MANAGER for grease and lube oil plant. Fifteen years managerial experience—production control, product development, inventory control, purchasing, costing, personnel, traffic. Salary commensurate with position. Box D-542, The Oil and Gas Journal, Tulsa, Oklahoma.

FIFTEEN years experience in pipe-line operations, gaging, tank strapping, etc., and general movement crude oil. Can furnish references. Am 43, sober and single. Salary commensurate with regional pay. Available immediately. Reply Box D-575, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE ENGINEER, Age 32, ten years experience, terminating five years foreign pipe line projects. Desires return to U.S.A. Completely experienced in all phases pipe line, station and terminal design and construction. Will consider work in expanding natural gas industry. Available for interview August 1. D-557, The Oil and Gas Journal, Tulsa, Oklahoma.

EMPLOYMENT as seismologist. Bachelor degree in geology, 9 years' experience in seismograph work with same company, 5 years foreign, 3 years as party chief. Available immediately. Reply Box D-566, The Oil and Gas Journal, Tulsa, Oklahoma.

MECHANICAL ENGINEER, 30, 1 year sales, 7 years engineering experience. Desire to relocate permanently in East Texas with independent contractor or producer. Will invest some capital. Presently employed, four years office and field work in drilling and production with major. Reply Box D-564, The Oil and Gas Journal, Tulsa, Oklahoma.

GEOLOGIST. Varied major company experience, desires position with independent concern. Box D-577, The Oil and Gas Journal, Tulsa, Oklahoma.

SOBER, dependable production or drilling superintendent desires permanent connection with progressive independent operator. Available on short notice. Reply Box D-573, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE Oklahoma University, 3 years geological experience major company, desires geological, land, or scouting connection with independent. Address Box D-572, The Oil and Gas Journal, Tulsa, Oklahoma.

PROCESS Engineer. 10 years diversified petroleum refining experience in operation and design. Desire engineering or operations job with small, progressive refiner. Chemical engineering degree. Reply Box. D-571, The Oil and Gas Journal, Tulsa, Oklahoma.

EXPERIENCED oil-field supply salesman. 20 years branch store, general office clerical and specialty sales work. Excellent record and references. Moderate salary for Dallas area, some traveling. Write Box D-570, The Oil and Gas Journal, Tulsa, Oklahoma.

GRADUATE geological engineer-petroleum engineer, age 39. Experience: geophysics, reservoir engineering, sample analysis, electric well logging, valuation reports, geological reports, well completions. 15 years experience Rocky Mountain, Mid-Continent, and West Texas. Desires connection with responsible company. Reply Box D-569, The Oil and Gas Journal, Tulsa, Oklahoma.

LEASE AND DRILLING BLOCKS

OFFERING 30,000 acres leases Valencia County, N. Mex., 10,000 Hidalgo County, 6,000 Torrance County, $1.50 acre—17,000 acres Wallace County, Kansas, $1. Write if interested, Box 2153, Denver, Colo.

HAVE proven location for shallow oil. Need few investors with $100.00 to join in drilling. Quick action. Box D-535, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and Gas Leases and drilling propositions in shallow territory of Allen, Simpson, and Warren Counties, Kentucky, W. P. Harley, Bowling Green, Kentucky.

OFFERING 32000 10 yr. oil and gas fee leases at $1.25 per acre in Western Nebraska County where oil play is hot right now. Box 2181, Denver, Colo.

MONTANA leases for sale. Carter Oil moving in to test the Big Poplar Structure in NE Montana. Also Murphy Oil to drill Devonian test on same structure. I have 7500 acres in scattered blocks on the same structure. Will consider selling 1% override also. A. C. Hornung, Consulting Geologist, 1241 Howard, Billings, Mont. Ph. 9-1502.

FOR SALE: 87-acre, new 10-year lease, in the heart of activity, Shelby County, Texas. $5 per acre. C. A. Parker, Office Polley Hotel, Center, Texas.

CUBA: MOST PROMISING OIL LANDS—Large areas, good geology. Reasonable royalty, rental or outright sales. No production curtailment. Ready high price market, unlimited demand. Refinery available. Holding in Pinar del Rio, Havana, Matanzas and Santa Clara Provinces on most favorable structures known. Maps and information available. Cuban Oil Enterprises. Aguiar 574 St. Havana, Cuba.

IF you've got real oil proposition or royalty that you wish to sell, or any defaulted municipal or special assessment bonds, bring your deal to me. Dyer-OJ, 1835 Champa, Denver, Colorado.

MISSISSIPPI

North-Central GUSHERS. North-eastern shallow. Will block your favorite spot 5,000 to 10,000 acres. 25 wells drilling this year. Bank references and quick action. Leases your bank with draft attached. Blocking, buying, drilling Arkansas, Louisiana, Tennessee, Kentucky. Gilt-edge organization. OIL, 1369 Court. Memphis, Tenn.

LEASES ROYALTIES

Producing and Nonproducing
Bought and Sold—Any Area
Inquiries Invited

B. D. BUCKLEY
6376 Clayton Road, St. Louis 17, Mo.

ALBERTA LEASES

Put your name on our list to receive offerings of Oil and Gas Leases in the hot areas of Alberta.

Maps and Plats furnished.

ALBERTA LEASEHOLDS
Dept. 7
131 9th Ave. West, Calgary, Alberta.

Mineral Right Acres

FOR SALE

21,000 mineral right acres underlying 44,000 acres of land in Mississippi, Alabama, Florida and Georgia, comprising in the main a ½ interest, and, in several cases, ¾ and all rights. For sale by states or blocks but not individual tracts. For further information

Call R-1242 or Write

ROBERT RALSTON & CO.
P.O. Box 1888 **Dallas 1, Texas**

LEASES AND RENTALS

FOR lease or rent 3030 square feet attractive office space in Frates Building, Odessa, Texas. Modern, air-conditioned and parking space. On lease basis, will arrange floor space to suit tenant. C. L. Frates, 1101 First National Building, Phone 2-6301, Oklahoma City, Oklahoma.

XUM

ROYALTIES

DEEDED ROYALTIES
San Juan Basin & Permian Basin. Write Harry S. Wright, Wright Bldg., Farmington, New Mexico.

WANTED: Oklahoma, Texas, Louisiana, New Mexico and Kansas Producing Oil Royalties. 3 to 5 year pay out required. Cash. No waiting. Submit your price and Pipe Line runs. Large or small acreage. Whitchurch Supply House, Box 584, Ardmore, Oklahoma.

MONTANA ROYALTIES
Millions of acres now leased by world's major companies, with huge drilling play in prospect. For booklet describing Montana geology and oil development, write Landowners Royalty Company, Box 1225, Great Falls, Montana.

FOR ROYALTIES in Coke, Runnels and Tom Green Counties, Texas, Contact: Joe Carter, Box 371, Phone 166 or 68, Bronte, Texas.

BUSINESS OPPORTUNITIES

WANT about $5,000 for small refinery deal in Montana. Abnormal returns from investment. Details — Box 2181, Denver, Colo.

PATENT ATTORNEYS

PATENT Practice before U. S. Patent Office. Validity and Infringement Investigations and Opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorney, Suite 418, 815-15th Street, N.W., Washington 5, D. C.

LEGAL BLANKS

BURKHART LEGAL BLANKS since 1908. Oil-Gas (all states), Business, Real Estate, Legal Forms, Leases, Revised With Government Regulations, Commercial Printing, Catalog and Samples on request. Burkhart Printing & Stationery Company, 115 South Cincinnati, Tulsa, 3, Oklahoma.

SERVICES

Let us help you locate your oil wells. Our scientifically instrumentation survey will show you where there is oil, outline complete pools, number of pays, etc. Most positive results; let us prove it to you. Don't waste your money on dry holes. Our services are reasonable. Breuer Bros., Sheridan, Ill.

MANUFACTURERS REPRESENTATIVE

SMALL but aggressive company established for many years in California desires major line of oil field equipment to supplement single major line now represented. Will consider manufacturers' representative arrangement or dealership. Box D-567, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION WANTED

WE ARE INTERESTED in purchasing marginal or semi-marginal production in Permian Basin for Cash or terms. Please send complete details to Box D-543, The Oil and Gas Journal, Tulsa, Oklahoma.

Raytheon Shows Radiophone At P.I.E.A. Convention

The importance of two-way radio communication in the petroleum industry was demonstrated at the recent Petroleum Industry Electrical Association convention, held at the Shamrock Hotel, Houston.

Raytheon Manufacturing Co., Waltham, Mass., displayed its newest model of two-way mobile radiophone which attracted the attention of executives representing oil and gas-producing companies from every section of the country. They were particularly interested in the simplicity of equipment and the clarity of transmission and reception.

ADVERTISERS

Advertising Council, The 83
Allen's Foundry & Machine Works 115
American Cable Division of American Chain & Cable Co., Inc. Inside Back Cover
American Meter Company 18, 19
Baker Oil Tools, Inc. 34
Barrett Division of Allied Chemical & Dye Corp. 16
Bethlehem Steel Co. 6
Bingham Pump Co. 80
Boyd Co., Clarence L. 98
Bucyrus-Erie Co. 123
Butler Manufacturing Co. 25, 100
Cameron Iron Works, Inc. 20
Cannon Electric Development Company 107
Cardwell Mfg. Co., Inc. 124, 125
Chicago & Southern Air Lines 119
Chicago Bridge & Iron Company 49
Christensen Diamond Products Co. 28
Classified Advertising 138, 139, 140, 141
Color Research, Inc. 116
Core Laboratories, Inc. 89
Crose Manufacturing Co., Inc., M. J. 96
Darling Valve and Mfg. Co. 23
Dean Brothers Pumps, Inc. 98
Diamond Alkali Company 14
Dravo Corporation 109
Drilling & Service, Inc. 129
du Pont 77
Emsco Derrick & Equipment Co. 8
Fairbanks, Morse & Co. 2
Fisher Governor Company 29
Fisher Research Lab., Inc. 106
Four Wheel Drive Auto Co., The 24
Gates Rubber Co., The 21
General American Transportation Corporation 30
Globe Oil Tools Company 104
Globe Steel Tubes Co. 13
Grancell, I. H. 106
Gunite Concrete & Construction Co. 109
Happy Company, The 65
Harbison-Fischer Mfg. Co. 117
Hilliard Corporation, The 130
Hinderliter Tool Co., Div., H. K. Porter Company, Inc. 105
Huey & Co., S. E. 96
Hughes Tool Co. ..... Back Cover
International Harvester Co. 70
Johns-Manville Corporation 103
Jones & Laughlin Supply Co. 12
Kellogg Co., The M. W. 92
Koch Engineering Company, Inc., The 1
Koppers Company, Inc. 94
Lane-Wells Company ..... Front Cover
Lafler & Blum, Inc. 114
Le Roi Company 27
Link-Belt Company 5
Macwhyte Co. 3
Marley Company, Inc., The 7
Mercoid Corp., The 109
Middle West Coating & Supply 98
Minneapolis-Honeywell Regulator Co., Industrial Division 97
Muskogee Iron Works 73
National Airoil Burner Co., The 109
National Geophysical Company, Inc. 112
National Supply Co., The 15
Nelson Electric Mfg. Co. 122
Nordstrom Valve Division, Rockwell Manufacturing Company ..... Inside Front Cover
Norris Brothers, Inc. 107
Oil and Gas Journal, The 114
Oil Base, Inc. 90
Oil Well Supply Co. 4
Oklahoma Contracting Corporation 101
Otis Pressure Control, Inc. 120
Parkersburg Rig & Reel Co. 110
Peerless Mfg. Co. 128
Perrault Brothers 95
Pipeline Cleaners Co. 95
Pritchard & Co., J. F. 119
Quijada Tool Company 107
Reading-Pratt & Cady Division of American Chain & Cable Co. 9
Republic Steel Corporation 126
Roebling's Sons Company, John A. 10
Security Engineering Co., Inc. 78, 79
Shaffer Tool Works 32
Spencer Chemical Company 108
Standard Pressed Steel Co. 101
Standco Brake Lining Co. 108
Swan Oil Well Treating Co. 127
Tapecoat Company, The 99
Templeton, Kenly & Co. 106
Thompson-Hayward Chemical Company 107
Trans-Texas Airways 98
Tri-Lok Company 108
Trojan Construction Co., Inc. 101
United Centrifugal Pumps, Division of United Iron Works 33
United Supply & Manufacturing Co. 21
Vick & Sons, E. W. 126
Visco Products Co., Inc. 31
Wales Trucking Co. 98
Williamson, Inc., T. D. 122
Willys-Overland Motor, Inc. 11
W-K-M Company, Inc. 17

CALENDAR

July

Institute of Petroleum, oil shale and cannel coal conference, Glasgow, Scotland, July 3-7.

Pacific Coast Gas Association, annual convention, Seattle, Wash., July 31-August 3.

August

Interstate Oil Compact Commission, summer meeting, French Lick, Ind., August 3-5.

September

National Chemical Exposition, Chicago Coliseum, Chicago, September 5-9.

American Institute of Chemical Engineers, regional meeting, Minneapolis, September 10-13.

American Society of Mechanical Engineers, and Instrument Society of America, Municipal Auditorium, Buffalo, N. Y., September 11-15.

National Petroleum Association, Hotel Traymore, Atlantic City, N. J., September 13-15.

Instrument Society of America, annual instrument conference and exhibit, Municipal Auditorium, Buffalo, N. Y., September 18-22.

American Society of Mechanical Engineers, petroleum mechanical engineering conference, Roosevelt Hotel, New Orleans, September 24-28.

October

American Gas Association, annual convention, Atlantic City, N. J., October 2-6.

Mid-Continent Oil and Gas Association, Texas division, Dallas, October 4-5.

Petroleum Branch, American Institute of Mining and Metallurgical Engineers, Mid-Continent meeting, Roosevelt Hotel, New Orleans, October 4-6.

American Association of Oilwell Drilling Contractors, annual meeting, Mayo Hotel, Tulsa, October 12-13.

Petroleum Branch, American Institute of Mining and Metallurgical Engineers, West Coast meeting, Elks Club, Los Angeles, October 12-13.

Permian Basin Oil Show, Odessa, Tex., October 19-22.

Independent Natural Gas Association of America, annual meeting, Shamrock Hotel, Houston, October 23.

November

American Petroleum Institute, annual meeting, Biltmore and Ambassador Hotels, Los Angeles, November 13-16.

NOMADS

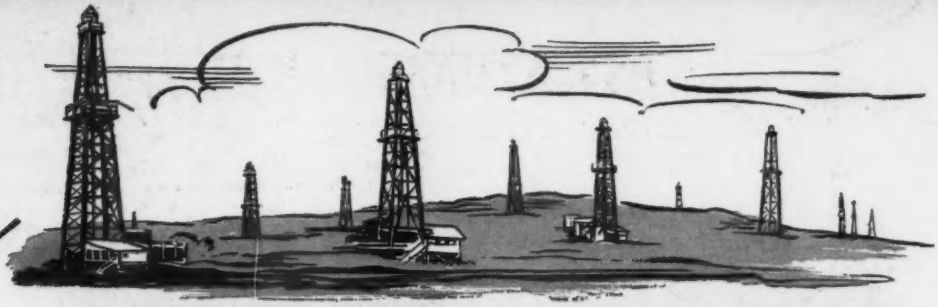
Tulsa Nomads, third Friday of each month. After Five Room, Tulsa Hotel.

Dallas-Fort Worth Nomads, first Monday of each month, Greater Dallas Club.

Houston Nomads, second Monday of each month. Ye Ole College Inn, Houston.

Los Angeles Nomads, second Wednesday of each month. Jonathan Club.

TRADE MARK
XUM



Just as some wells produce more than others...

TRU-LAY...

will give you more of everything you want from wire rope

● TRU-LAY WIRE ROPE is preformed and made by the men who originated preforming. In it toughness and strength are properly combined to give better and longer service regardless of job conditions. Users like its easier handling qualities and the fact that it is available in all constructions, lays, centers and grades.

Specify TRU-LAY—the wire rope that's engineered to cut costs and improve production—*and get the most of everything you want from wire rope.*

ACCO *In Business for Your Safety*

AMERICAN CHAIN & CABLE
AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Chicago, Denver, Houston,
Los Angeles, Pittsburgh, San Francisco, Bridgeport, Conn.

XUM

"Hughes has the know-how"

Million-dollar rock pile to make more hole faster

The honeycombed rock pile at Hughes laboratory represents research costing more than a million dollars. For we at Hughes not only keep accurate field records of our bits in service, but, to keep on improving the performance of Hughes Rock Bits, we maintain the most extensive research department in the industry.

This unique laboratory furthers our field knowledge as to which bit designs work best in granite, chert, dolomite, limestone, sandstone and other formations found all over the world. By drilling into these test blocks, under rigidly controlled operating conditions, the action of different cones can be studied and the best type of bit for every formation definitely established.

This is just one illustration of the intensive research program—started in 1911—which Hughes Tool Company conducts in a never-ending effort to build better rock bits. Rock bits that will enable the petroleum industry to "make more hole faster." This combined experience gained in laboratory *and* field over the years has given Hughes the greatest backlog of know-how in the business!

HUGHES TOOL COMPANY HOUSTON, TEXAS

World Standard of the Industry

XUM